FLYING

JANUARY 1951 · 25 CENTS

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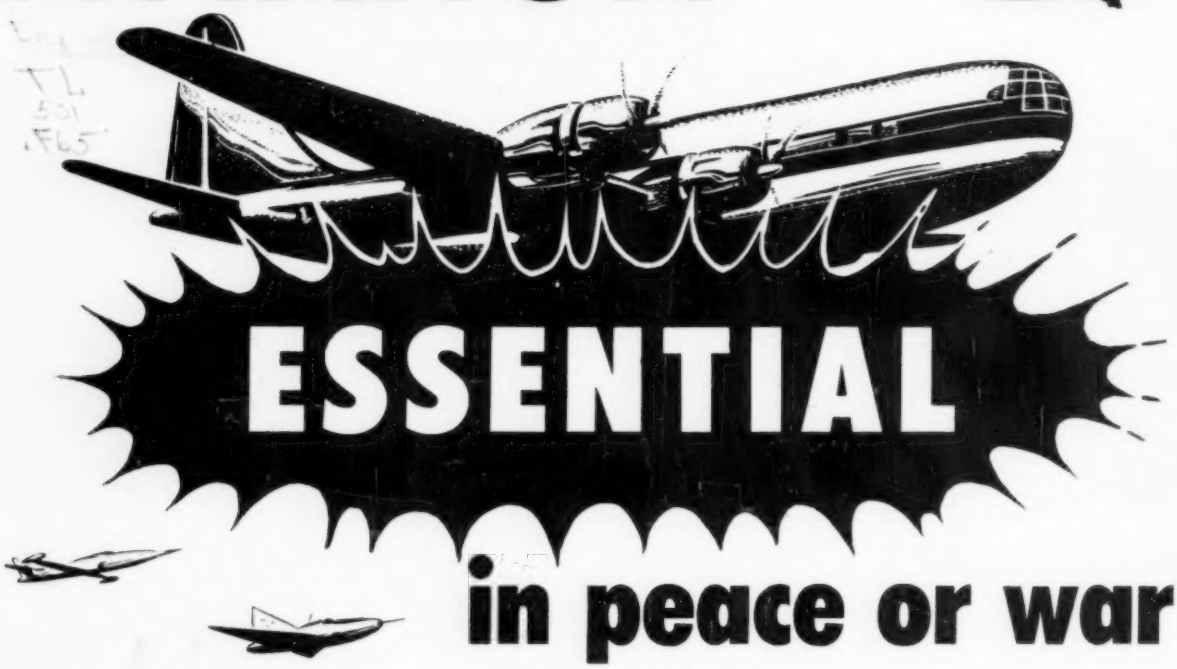
KOREAN STRIKE

An Eye Witness Report
By Charles Black
FLYING'S MANAGING EDITOR

The Elephant-Skinned B-47
SEE PAGE 18

Jet Torture Flight ★ ★ Will The CAA Be Militarized?

AVIATION



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THE COVER: World's fastest bomber, the Boeing B-47 (Stratojet) has top speed well over 600 m.p.h. (See article on page 18.)

EDITORIAL

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THE MAIL BOX

CONTRA-PROP RECORD

I recently read of a British plane with contra-rotating propellers flying 575 m.p.h. on a 15-mile closed course. Isn't this a record of some sort?

JOHN KARALUKAS

Cleveland, O.

● British aviation authority Charles W. Cain replies: "I don't know of any contra-prop kite that ever did 575 m.p.h. over a 15-mile closed circuit. The Westland *Wyvern* was never entered in any such dash as far as I can remember. The only other possibility would be the Martin Baker M.B.5 which was credited with a maximum speed of over 450 m.p.h." An Italian plane equipped

with contra-props, the Macchi-Castoldi MC72 (above), set the Absolute World's Speed Record for Seaplanes on October 23, 1934, and that record still stands. Powered by a Fiat A.S.6 engine developing 3,100 h.p. and piloted by Lieut. Francesco Agello, the MC72 attained a top speed of 440.67 m.p.h.—ED.

CORRECTION

Hy Sheridan's "Robot Pilot for Lightplanes," [November, 1950, FLYING] was an amusing and informative feature on one of the greatest aids to private flyers in aviation development.

One correction, however: My title with our organization is Vice President, The Hearst Corporation. I am not publisher of the *Herald-American* (as inferred in one of the captions), but was prior to my Washington assignment of Chief of the Aircraft Division, War Production Board.

MERRILL C. MEIGS

Chicago, Ill.

THE BAT

While looking through a back copy of your magazine, I was particularly interested to see the all-wing lightplane designed by Raoul Hoffman. ["Fifteen Years Ago," March, 1950, FLYING.]

Back in 1940, this plane—appropriately named the "Bat"—had been gathering dust for several years in the old blimp hangar at Albert Whitted Municipal Airport in St. Petersburg, Fla. I was attending high school at the time and used to spend every spare moment at the field doing odd jobs and getting stick time on the ground.

One afternoon some of the mechanics tuned up the "Bat's" engine and a young instructor, Sam Huey, volunteered to make a test hop.

Huey taxied out and made a normal take-off, but as he throttled back after leveling off, the nose dropped heavily. He gave it the needle and decided to get down in a hurry, but as he turned on final about 300 feet above the ground, a sheet of flame shot out of the cowling. We watched Huey jump to his death. The chute never had time to open. The "Bat" crashed in flames . . .

EVERETT R. ATKINS, JR.

Beaumont, Tex.

AIR DICTATOR

In the November "Mail Box" column, John E. Ayer writes: "I'm 100 per cent for Federal control to be handled exclusively by the CAA . . . We'll soon have 48 air dictators to rule us . . ."

Apparently Mr. Ayer feels 48 dictators would be less palatable than one dictator. Has he not learned that the way to lose freedom is to increase the power or money available to a politician?

The Russians and other totalitarians like the one dictator idea. That's why they don't like Rotary Clubs or local option of any kind.

Getting the pilots in 48 states to arrive at their own standards is the best guarantee against dictatorship. Flying already has organizations to do this.

The CAA should then become flying's servant, not its master.

ANGUS D. PFAFF

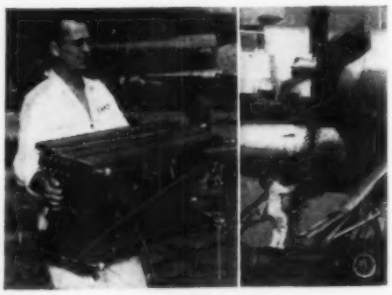
Evanston, Ill.

PORTABLE LADDER

I've just seen these pictures [below] of Fairchild's new portable folding ladder which seems to me to be a solution to Hy Sheridan's "Aviation's Silliest Dilemma"—or "How Yuh Gonna Get 'Em Down on the Ground?" [December, 1949, FLYING.]

RALPH NORTON

San Diego, Calif.



● This unique new portable ladder, developed by the Fairchild Aircraft Division, is designed for crew members entering and leaving the Fairchild XC-120 *Packplane*. The ladder expands to 15

(*Continued on page 62*)

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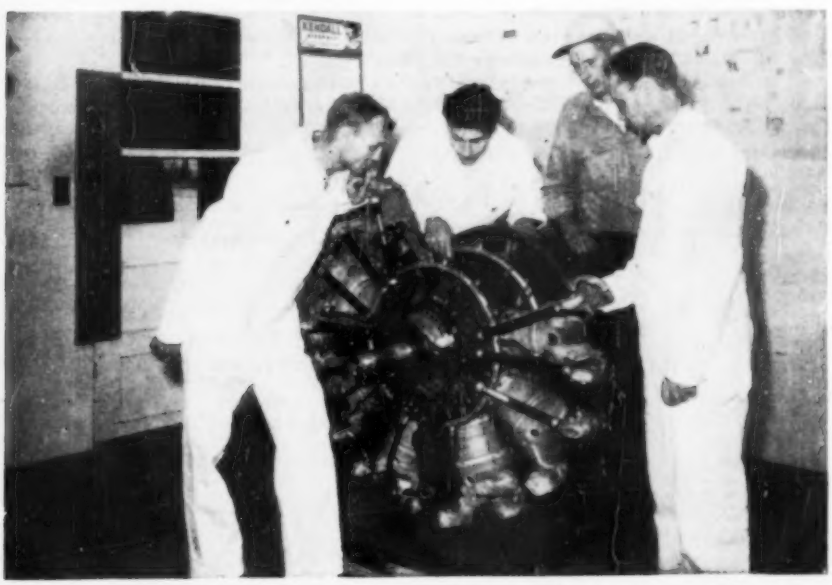

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NOTES ON CIVIL FLYING

Tougher Private Exams?

CAA and CAB are considering stiffer requirements for private pilot certificate. Proposal would involve reinstating written examination, increased cross-country training and practice, and development of a more practical flight test.

Ryan Executive Trophy

Ryan Aeronautical Company will award annual trophy (see photo) to "Flying Businessman - of - the Year" who accumulates the highest yearly total of flying hours. Trophy will be annual affair. In addition company will give monthly plaque and quarterly awards to owners with greatest amount of executive plane travel time during those periods. No owner can receive more than one monthly award yearly. Awards are restricted to *Navion* owners.

New Goodyear Amphibian

New Goodyear experimental four-place amphibian (see page 37) is all-metal with 186-h.p. engine. It was developed from Goodyear's earlier three-place GA-2 *(Duck)* which bore CAA certification. Plane has planing tail type hull, fully retractable landing gear, partial span leading edge slots, slotted flaps, reversible variable pitch propeller, crosswind landing gear. It is easily converted from all-passenger to all-cargo payload.

Okay British Planes for U. S.

Civil Aeronautics Administration has agreed to accept British Certificate of Airworthiness as equivalent to U. S. certificate. Henceforth there will be no obstacle, on airworthiness grounds, of the import and use of British civil airplanes into the United States.

California Guide

Air Photo Guide published at 2162 Sunset Boulevard, Los Angeles 26, gives pictures, data, traffic patterns, of California airports. Price $1.

Wright to Build Sapphire

Wright Aeronautical Corporation has obtained rights to manufacture series of British propeller turbine and turbojet engines. These are the *Sapphire*, world's most powerful turbojet; *Python* turboprop, and the *Mamba* and *Double Mamba* turboprops.

Look to the Rear

Rear-facing seats will be installed in 20 Douglas C-54's following developmental work at Wright Field. The seats will be stressed to withstand forces three times as great as front-facing seats.

Southwest Booming

Recent trip by FLYING editor through Southwest shows aviation factories in Wichita, Dallas and Fort Worth booming.

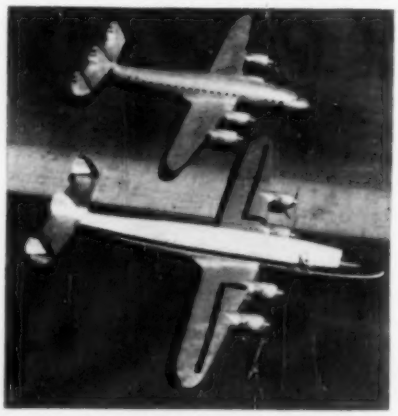
- Cessna has over $25,000,000 backlog, including contract to build 400 liaison planes, and subcontracts with Boeing (B-47) and Lockheed (F-94). Nevertheless, Cessna plans to continue to build personal airplanes at present five-a-day rate. Despite heavy backlog of orders it will not increase personal plane production.
- Beech has over $50,000,000 backlog, is building 12 *Bonanzas* a week, expects to build 480 in 1950. New Beech projects include YT-34, still being evaluated, and the *Twin Bonanza*.
- Temco has recently finished special production lot of 50 new Luscombes (it has bought Luscombe plant), but probably will not build more at present because of parts and material difficulties. All personal plane activities, including about 20 unsold *Swifts*, are being transferred to Luscombe plant. Meanwhile Temco is busy on military orders.
- Outlook in mid-October was for continuing personal plane production at present levels but unlikelihood of increase despite backlog of orders. Reasons were enormously increasing military production, inability of manufacturers to get needed supplies of materials and components for civilian orders.

Ercoupe Line Closes

Ercoupe assembly line has been closed to make room for military work. Sanders Aviation will continue supplying spare parts through their distributor-dealer organization.

Super Connie

New *Super Constellation* with four Wright 18-cylinder compound engines producing 13,000 horsepower at take-off



is more than 18 feet longer than *Connies* now flying. It can carry 40 per cent more payload, has 41 per cent more passenger capacity, 68 per cent more cargo space. Full gross load at take-off is 130,000 pounds. (*Super Connie* in foreground.)

To Suspend Navion Line

Ryan Aeronautical Company will suspend *Navion* production early in 1951 in order to devote company's entire facilities and personnel to military needs. No interruption is anticipated in present program to manufacture 150 1951 *Navions* over the next few months, and military versions will be continued in production. Ryan emphasizes *Navion* production is only being "temporarily suspended, not terminated," and will be reinstated at earliest feasible date.

Blind Flying Shield

New instrument flight training shield, called Willson Training Aid, uses blue plastic shield (shown clear in illustration) which permits pilot to see instruments clearly but does not allow him to see out if amber plastic is placed over windshield and windows. It is sold by Van Dusen Aircraft Supplies, Minneapolis.

Seaplane Facilities

CAA has published new booklet, "Seaplane Facilities," which contains charts and tabulations to aid those planning to build seaplane facilities. Price 25 cents from U.S. Government Printing Office, Washington 25, D. C.

Dallas Reopens

Dallas Aviation School, Dallas, Tex., has reopened its classes for A&E mechanics and aviation specialists.

Will Build Aero Commanders

Aero Design and Engineering Corp. has recently taken over the hangar at Tulakes Airport, Oklahoma City, and is setting up a production line to build *Aero Commander* light twin-engined executive planes. The *Aero Commander* is five- to seven-place twin-engined high-wing monoplane to be powered initially with two 190-h.p. Lycoming engines.

Wonder Jet

British Information Service has new 16-mm. sound film available for rental ($2.50) showing development of jet engines. It is called "Wonder Jet."

ANNOUNCING THE 1951

SUPER CUB

with 125 HORSEPOWER and DURACLAD Finish

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Added, too, for 1951 is the remarkable new Duraclad finish, standard on all Piper planes—a nonflammable, plastic covering which is tougher, longer lasting—ideal for lowest cost maintenance.

When flown under new special-purpose flying provisions of C.A.R., the Super Cub can easily handle a 1,000-pound load. With a half ton on board, the Super Cub clears a 50-foot barrier in 950 feet.

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MILITARY NEWS

THE WAR IN KOREA

. . . **The Korean Communists** are past masters of concealment, but Capt. Charles A. House, a Marine flyer from Burlington, Ia., is a master of unconcealment. Charlie is color blind, and he is able to pick out well-camouflaged targets that others overlook. He got into the Marines in 1942 by memorizing the color charts to pass his physical examinations.

. . . **Odd accident** of the Korean War occurred when a rescue helicopter was knocked out of the air by an anti-tank mine. South Koreans had dug out the mine but had withdrawn when they noted it had a time fuse. It exploded just as the helicopter flew over, causing the craft to crash and injure the two crewmen.

. . . **Three newsmen**—Harold Faber of the New York Times, John Jefferson of Columbia Broadcasting and John M. Colles of Reuters—were injured when their C-119 tried to make an instrument landing in murky weather in Japan. Three crewmen were killed and four other persons were also injured. Jefferson, a frequent contributor to FLYING, is the author of "Crash Landing in Korea," on page 20 of this issue.

. . . **Fighters** of the U.S. Fifth Air Force left behind smouldering ruins of tanks and rolling stock as they spearheaded the advance of the 24th Infantry Division in North Korea. Despite ruses by Red troops menacing the forward drive, fighters sought out and destroyed tanks one by one, and sometimes two at a crack as the picture shows.

. . . **Ujong Chi** and his friends greet Lieut. Col. Max J. Volcansek, Jr., of the First Marine Air Wing when he brings them gifts of rations. The South Koreans had befriended Colonel Volcansek two weeks before when he was forced to bail out near their village. (See below.)

. . . **Two Air Force pilots** and their commander were grounded as a result of their part in the alleged strafing of a Russian airfield near Vladivostok on October 5. Warren Austin, Chief U.S. delegate to the U.N., delivered a note to that body expressing regret and offering compensation for the incident. The pilots are Lieuts. Alton H. Quanbeck and Allen J. Diefendorf and their commanding officer was Col. Stanton T. Smith, Jr., of the 49th fighter-bomber group, based in Japan.

. . . **Plane insignia** of North Korea's small Communist air force varies considerably. During the early days, at least five distinct markings were noted, almost as many as they had planes. Most markings have the Communist red star as the basic feature, with circles of different colors around the star.

FROM OTHER FRONTS

. . . **Avro Canada Orenda turbojet** engine has been flown for the first time in an F-86 jet fighter and two Avro Canada CF-100 night fighters have made over 50 flights in tests by the RCAF.

. . . **Reported construction** of two aircraft carriers by Russia would bring her total to three. The new ships are said to be of 20,000 and 25,000 tons, and, with the 23,000-ton LETL 1, built at Leningrad, will start carrier fleet.

. . . **French and Italian** airplane plants may make twice as many F-84 jet fighters as Republic under the mutual assistance program.

. . . **French Defense Minister** Jules Moch says that Russia's air force totals 700,000 men. France, with U. S. aid, will have 17 fighter plane groups by 1951, 22 by 1952 and 28 by 1953.

. . . **Swedish Air Force** announced that the United States has agreed to sell it 115 surplus aircraft.

WHAT THEY SAY

. . . **"Sorry to knock out** a good story!" was the comment from Lockheed in response to FLYING's note last month about variable sweep wings on the F-90 penetration jet fighter. Lockheed's original material had mentioned "design studies" and "wind tunnel testing" and an enterprising newsman launched a full-blown new aircraft right out of his imagination.

. . . **"Jet fighters** can get out of hot spots in a hurry or go upstairs and fight if attacked. They can fight their way through enemy opposition and also give ground support."—Gen. Hoyt S. Vandenberg, USAF commander, in commenting on jet effectiveness in Korea.

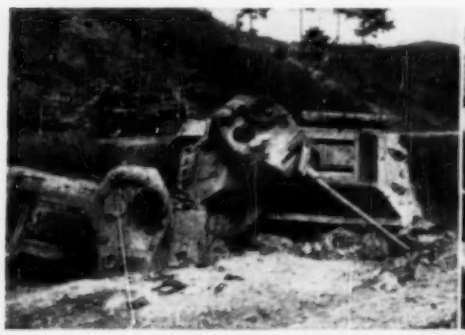
HERE AT HOME

. . . **Col. David S. Schilling** of Alexandria, Va., completed the first non-stop, transoceanic flight in a jet fighter on September 22, when he landed his F-84 at Limestone AFB in Maine 10 hours and one minute after leaving Manston, England. Quick work by Flight C of the Air Rescue Service picked up Lieut. Col. William D. Ritchie, also of Alexandria, when his F-84 was forced down in Labrador because of refuelling difficulties. Refuelling of both planes in flight was accomplished at 25,000 feet between 225 and 250 m.p.h.

. . . **Turbojet and turboprop** engine development has been speeded up, it is generally agreed, by the recent seven-year pact between Curtiss Wright and the Armstrong-Siddeley Motors, Ltd., of London. The agreement will make the powerful Sapphire turbojet engine available to the U.S. Air Force, and the British will receive the new Curtiss propellers, already in the transsonic speed range.

. . . **Increased costs** during the past year have knocked off the equivalent purchasing power of 750 F-86 jet fighters, a House Armed Services subcommittee was told by John McCone, Under Secretary for Air.

. . . **North American's AJ-1** attack bomber, weighing more than 17 tons, is the heaviest aircraft to land aboard a carrier. Shown on the flight deck of the Coral Sea, the AJ-1 is designed for high speed attack from carriers, has a top speed of more than 350 m.p.h. and carries a crew of three in a pressurized cockpit.



Destroyed tanks two at a crack.

"Thank you, Colonel Volcansek!"

AJ-1 lands on the Coral Sea.

FLYING
VOLUME 48, NO. 1
JANUARY, 1951

WILL THE CAA BE MILITARIZED?

A bill has been written to take CAA into the Air Force, but there's plenty of opposition from civilian agencies.

NEW CAA CHIEF

Donald W. Nyrop, who was sworn in on October 4 to succeed Del Rentzel as Administrator of Civil Aeronautics, has been in aviation for 11 years. He became an attorney with the Civil Aeronautics Authority in 1939, joined CAB in 1942 and that same year went on duty with the Air Transport Command. Released with the rank of lieutenant colonel in January, 1946, Nyrop worked with ATC on international policy until he joined CAA as deputy administrator in 1948, a job he held until October.

AS EVERYONE knows, the U.S. Coast Guard undergoes a quick transformation under mobilization. In the twinkling of an eye it detaches itself from the Treasury and becomes part of the Navy.

Today there is some official pressure in Washington for applying the same process to the CAA with appropriate variations. While Congress would have to give its blessing to make such a marriage legitimate, there is fairly strong sentiment in the Pentagon building and a lesser amount elsewhere in the Government for hitching the CAA to the Air Force in the event of a shooting war or extreme national emergency.

The principal advocates of the proposal are high AF officials and some elements in the CAA itself. It has been rumored that Delos Rentzel did his bit to plug for the idea before relinquishing his post as CAA Administrator to become chairman of the CAB. Taking a dimmer view are practically all of the organizations interested in civil aviation such as the Air Transport Association, the Air Line Pilots Association, the National Association of State Aviation Officials and the AOPA. Also inclined to line up with the opposition are the Navy, the National Security Resources Board and the Budget Bureau.

The proponents of the move argue that the increased tempo of modern war allows no time for preserving fine distinctions between many civilian and military aviation operations such as the airways. In a national emergency, military traffic would have to make more extensive use of these facilities than in World War II. It would need a closer tie-in with ground personnel manning the all weather landing systems and other flying aids than is possible with authority divided between civilian and military agencies. And these are points of friction. The AF prefers the GCA landing system while the CAA clings to its ILS installations; only uses the GCA in three airports.

It is also contended that with enemy air attack a greater threat than ever before, stronger and more integrated controls should be exercised over flying across coastal and border areas and in the vicinity of vital installations such as atomic energy plants. Even one plane carrying one atomic bomb can do fearful damage if it gets through the border screens. (*Continued on page* 61)

By RICHARD E. SAUNDERS
Washington Editor of FLYING

MILITARY NEWS

THE WAR IN KOREA

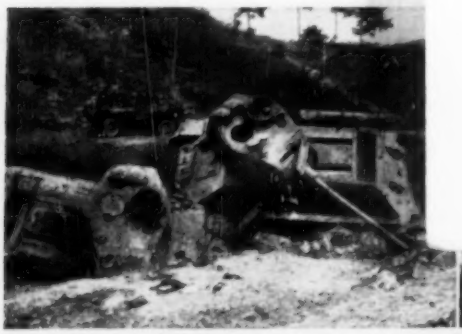
. . . **The Korean Communists** are past masters of concealment, but Capt. Charles A. House, a Marine flyer from Burlington, Ia., is a master of uncon-cealment. Charlie is color blind, and he is able to pick out well-camouflaged targets that others overlook. He got into the Marines in 1942 by memorizing the color charts to pass his physical examinations.

. . . **Odd accident** of the Korean War occurred when a rescue helicopter was knocked out of the air by an anti-tank mine. South Koreans had dug out the mine but had withdrawn when they noted it had a time fuse. It exploded just as the helicopter flew over, causing the craft to crash and injure the two crewmen.

. . . **Three newsmen**—Harold Faber of the New York Times, John Jefferson of Columbia Broadcasting and John M. Colles of Reuters—were injured when their C-119 tried to make an instrument landing in murky weather in Japan. Three crewmen were killed and four other persons were also injured. Jefferson, a frequent contributor to FLYING, is the author of "Crash Landing in Korea," on page 20 of this issue.

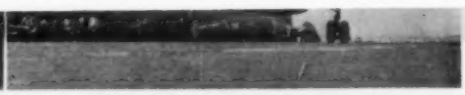
. . . **Fighters** of the U.S. Fifth Air Force left behind smouldering ruins of tanks and rolling stock as they spearheaded the advance of the 24th Infantry Division in North Korea. Despite ruses by Red troops menacing the forward drive, fighters sought out and destroyed tanks one by one, and sometimes two at a crack as the picture shows.

. . . **Ujong Chi** and his friends greet Lieut. Col. Max J. Volcansek, Jr., of the First Marine Air Wing when he brings them gifts of rations. The South Koreans had befriended Colonel Volcansek two weeks before when he was forced to bail out near their village. (See below.)



Destroyed tanks two at a crack.

"Thank you, Colonel Volcansek!"



AJ-1 lands on the Coral Sea.

WHAT THEY SAY

. . . **"Sorry to knock out** a good story!" was the comment from Lockheed in response to FLYING's note last month about variable sweep wings on the F-90 penetration jet fighter. Lockheed's original material had mentioned "design studies" and "wind tunnel testing" and

PAG

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FLYING
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JANUARY, 1951

CAA

ITARIZED?

n written to take CAA
rce, but there's plenty
rom civilian agencies.

AGES

SSING

· U.S. Coast Guard undergoes a quick
bilization. In the twinkling of an eye
ıe Treasury and becomes part of the

ıl pressure in Washington for apply-
e CAA with appropriate variations.
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nount elsewhere in the Government
Air Force in the event of a shooting
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f the proposal are high AF officials
AA itself. It has been rumored that
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or to become chairman of the CAB.
practically all of the organizations
ıch as the Air Transport Association,
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e argue that the increased tempo of
for preserving fine distinctions be-
itary aviation operations such as the
gency, military traffic would have to
these facilities than in World War II.
with ground personnel manning the
and other flying aids than is pos-
ed between civilian and military
nts of friction. The AF prefers the
the CAA clings to its ILS installa-
three airports.
ith enemy air attack a greater threat
ınd more integrated controls should
oss coastal and border areas and in
tions such as atomic energy plants.
atomic bomb can do fearful damage if
screens. (*Continued on page 61*)

By RICHARD E. SAUNDERS
Washington Editor of FLYING

Skyraiders on patrol. Author Black took this photograph of AD's during strike against North Korean targets.

Korean Strike
-FROM THE BACK SEAT

By CHARLES L. BLACK
Managing Editor of FLYING

After mission, Capt. Thomas U. Sisson (left), commanding the Leyte, discusses results with the pilot, Lieutenant Comdr. Ralph Bagwell, and Black (right).

Flak barely misses editor on successful bombing mission against North Korea Reds.

NORTH KOREA was a smashed, shattered land—a country of bombed-out rail lines, gutted cities and ruined bridges. In the rugged northeastern root of the peninsula, cornered North Korean troops fought back savagely but were being battered into submission by a rain of bombs and rockets.

The Navy's fast carrier Task Force 77 prowled off the Korean east coast, filling the skies with *Skyraiders, Corsairs* and jet *Panthers.*

I flew along with a strike of Navy *Skyraiders* and *Corsairs*, riding in the back compartment of a two-place Douglas AD-3Q piloted by Lieut. Comdr. Ralph Bagwell, 30, of Piedmont, S. C. We took off from the U.S.S. *Leyte*, part of Task Force 77, about 85 miles off Songjin on Korea's east coast, and headed through low grey scud toward the target area where we were scheduled to make a wide sweep over enemy territory.

When you ride in the rear of an AD-3Q you're not in condition for quick action. I was encased like a mummy—helmet pressed on my head, lip mike against my lips, Mae West fastened tight, life raft attached, parachute buckled on, shoulder harness clamped and safety belt secured. By leaning forward and straining I could see the other *Skyraiders* back in formation, their heavy loads of olive-drab 500-pound bombs and rockets incongruous against the dark blue Navy fuselages.

Up forward Bagwell outlined the mission as calmly as a doctor diagnosing a case.

"First target for the group is a couple of railroad bridges inland," he said over the intercom. "We'll hit the coast of Songjin and will drop off several planes to take care of the bridges. We'll move on farther north with another AD and a couple of *Corsairs.*"

The big *Skyraider's* engine throbbed as we approached the coast at 155 knots. The fighters ahead of us began to form vapor trails which turned into little ringlets, almost perfect smoke rings.

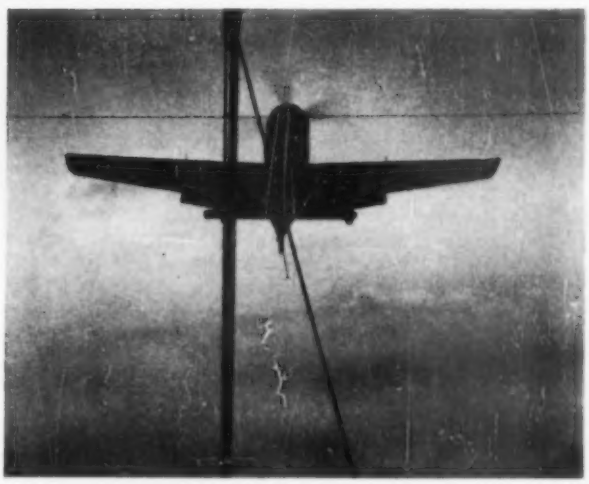
Nearer the coast, the radio hissed frequently as pilots from Task Force 77's *Philippine Sea* (who'd been over the target area for a couple of hours) talked back and forth about targets. The Navy was keeping a screen of aircraft over northeastern Korea during all daylight hours.

"Try one of your rockets on that . . ." I heard. Then a few moments later: "I see smoke coming out of that tunnel. We'll lob a couple of rockets in."

The planes were hitting all transportation, paralyzing the Reds. "Let's see if we can knock out those sampans, okay?" I heard the pilots spotting targets and scoring their hits.

As we sighted the low blue hulk of Korea on the horizon, 37 minutes after leaving Task Force 77, the *Philippine Sea* strike was ready to return to the formation at sea. Low over the water, we headed toward Songjin at about 500 feet. Ahead of us, brown and mauve hills jutted from the glassy Sea of Japan and low grey clouds hugged (*Continued on page* 58)

Tiny villages popped into view. The smoke from bombed-out factories marked the Skyraider's progress north. Red Korea was "a dead country—prostrated by our air power."



Landing back aboard Leyte, Skyraider with Black aboard bears holes in wing and fuselage, but the mission has knocked out three locomotives and caused other damage.

the ELEPHANT-SKINNED B-47

By CURTIS FULLER
Editor of FLYING

It takes a mill like that used for ship's plate to form wing skin of the Stratojet.

The five-eighths-inch skin of B-47 wing is nearly as thick as a pack of cigarettes.

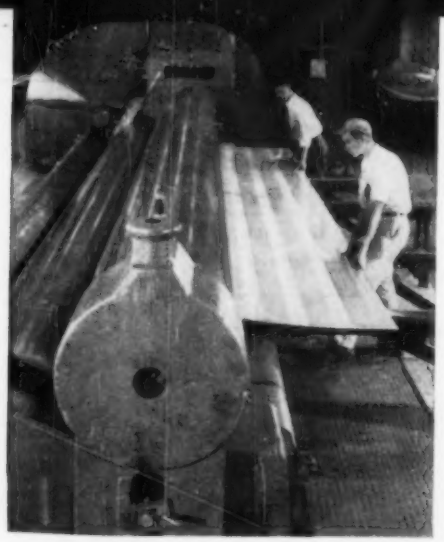
TWENTY YEARS AGO the principal tools required to set up an aircraft production line were glue pots, sewing machines, saws and wire cutters. The advent of all-metal airplanes changed this considerably but perhaps only in degree. You could still cut aluminum skin with a pair of tin shears. A handful of men could, and did, set up and operate an entire small production line. They are still doing so in several aircraft factories today.

But where high speed has been brought on, the revolution is upon us. And what a revolution it is. No one can visit the Boeing B-47 *(Stratojet)* bomber plant at Wichita without a sort of helpless realization that everything he understood or thought he knew about airplane production is now hopelessly out of date.

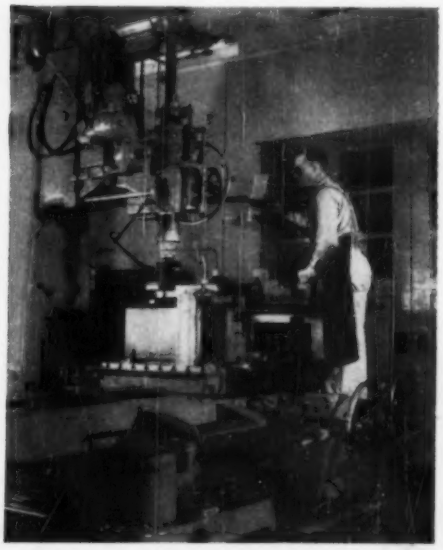
I knew, in a strictly academic way, that the fast jets had to be built immeasurably stronger than the old propeller-driven airplanes. But I did not fully understand what that meant until I held in my hand a small piece of B-47 wing skin and saw it was nearly as thick as a pack of cigarettes. In this one fact can be summed up a score of problems—problems of forming the skin, of machining and tapering it, of boring it, of tolerances, and problems of weight—for the five-eighths-inch skin alone weighs over nine pounds per square foot.

The B-47, as everyone knows, is a swept-wing jet bomber now in production at the Boeing factory in Wichita. It has a speed well over 600 m.p.h. and is powered by six General Electric J-47 axial-flow gas turbines. It carries a crew of three and 20,000 pounds of bombs internally, and it reportedly has a gross take-off weight of 185,000 pounds. Its wing span is 116 feet.

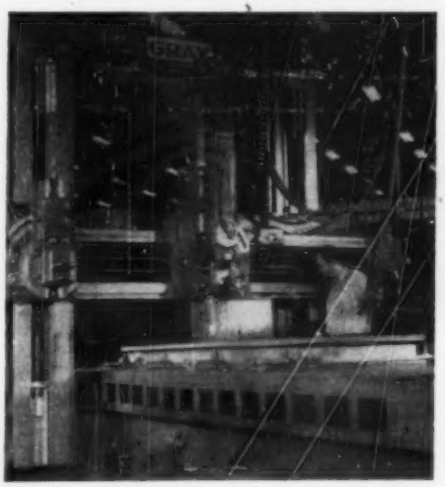
The plane is under rigid military security. You can't get into the plant without a copy of your birth *(Continued on page 45)*



Rolling mill like that used to form ship's plate, contours B-47's wing skin to within 20/1,000 of an inch or less of final shape.

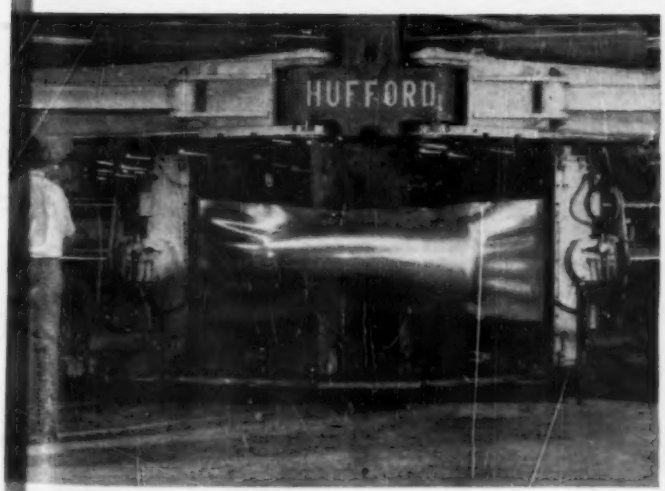


Jig-borer is electronically controlled, can maintain accuracy within 1/30 diameter of human hair. It is kept in air-conditioned room.

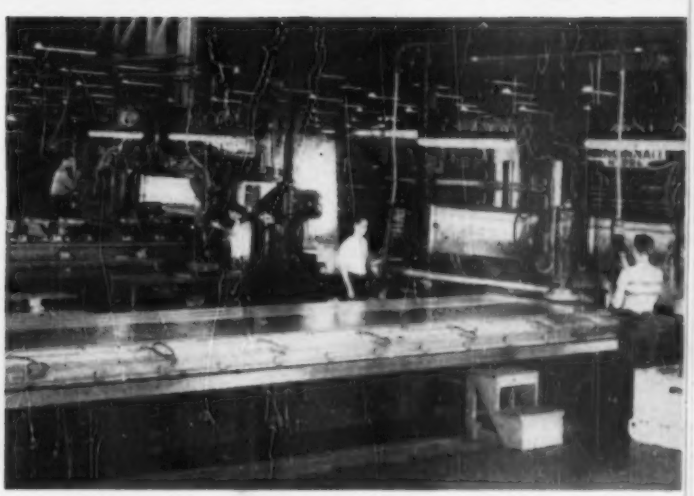


Gray milling planer is combination planer, miller and jig-borer for B-47 jigs and master gauges. It cuts setup time 30 per cent.

B-47A's on final assembly line at Wichita give some idea of complexity of jet bomber. Seventy-five per cent of parts are made from new 75ST aluminum.



...fford sheet stretch press forms fuselage skin of Stratojet by stretching ... wrapping the skin sheets across plastic and Kirksite dies. It weighs 7... ...s and is largest single piece of equipment to be brought into plant.



Skin mill is used to taper B-47 wing skins to correct thickness. Wing skin is bought in only three thicknesses and is machine-tapered from 5/8-inch thickness at butt of wing to three-sixteenths of an inch at the tip.

Crash Landing IN KOREA

By Ens. RAY SANDERS, USN
as told to John Jefferson

Ensign Sanders points out the place near Seoul where he was rescued by Marine helicopter.

WE WERE FOLLOWING the Han River east toward Seoul. We had taken off a couple of hours earlier from the flight deck of the aircraft carrier *Boxer* standing off the west coast of Korea and I was wing man for my section leader, Lieut. Robert Severns of Pawhuska, Okla.

Our mission was to fly close and deep support for the Marines who had landed at Inchon. Both Bob and I were flying AD's—Douglas *Skyraiders*—and were each carrying two napalm bombs, one 500-pound general purpose bomb, a full load of 12 high velocity aircraft rockets, and a full load of ammunition for our twin 20-mm. guns.

Our orders were to strike at targets of opportunity . . . meaning any enemy targets we spotted. We had just finished a nice run on some box cars. The North Koreans have a trick of leaving the box car doors open so we'll think they're empty, and piling supplies at both ends. I blew up one car with a rocket and hit three more with a napalm.

Then Bob suggested we hit some antiaircraft batteries he had seen the day before. We started in on our runs, firing rockets and our twin 20's. Suddenly I noticed my oil pressure way down at zero. That's when I screamed bloody murder. I yelled to Bob, "Zero one, I got no oil pressure."

I felt just about as weak as a person could feel. I knew the engine couldn't run much longer. Severns then told me to head south for the mountains. He turned on his IFF so the ships in Inchon harbor could track us, and he gave the "Mayday" emergency call over the circuit.

I climbed to about 3,000 feet before my engine started wheezing. We were then on the east side of Seoul which, of course, was in enemy hands. I asked Bob if I should jump. He replied, "That's your prerogative." I decided not to. I had heard about a helicopter rescuing a pilot and thought I'd be better off if I survived a crash than possibly parachuting into enemy hands. All the time I was going down I was wondering whether I'd be able to broadcast to the boys over Seoul radio if I were captured.

I picked out a road directly below to land on, but then decided that the people walking along in white robes, if they were civilians, might be angry and kill me for the damage we have done to them in fighting the Communists.

I shifted to a road dead ahead on a mountainside. There looked to be a straight stretch about 400 feet long. Then the road made a sharp turn to the left. I dropped my dive brakes to get down quickly, then pulled them up for the final approach. Suddenly I noticed a tree in my flight path. I had about 150 knots airspeed at that point. I de- (*Continued on page* 55)

The ack-ack was just starting when the Skyraider's oil pressure failed.

"I dropped my dive brake and flaps after that and went in. I was going about 130 knots when I hit the road. The dive break hit first."

New Geisse Crosswind Gear

Unusual new design principle could bring crosswind gear within reach of everyone if it proves out in service.

THE IDEA for a crosswind landing gear is not new but the solution to the problem has proved as coy as a deb who thinks that she can do better. What seems at first touch to be a most simple problem has proved not so simple—at least not so simple as the people who have tried to conquer it, everything being relative according to Mr. Einstein.

In recent years a number of successful crosswind gears have been developed. But until recently the only crosswind gear in regular production was the extremely successful Goodyear gear which was developed with the aid of a grant from CAA. The Goodyear gear has been installed on mostly lightplanes and will be standard on the new *Helioplane* but it has one drawback which so far has prevented its more widespread adoption—it is expensive.

Now there is a new crosswind gear out which its sponsors say will be low-priced and which is now being licensed to manufacturers. Piper is testing the gear and modifying it somewhat for possible extensive use on new Piper lightplanes, and the Army Field Forces are interested in its use on their liaison planes.

The gear was invented by John Geisse, former CAA private flying consultant and research engineer, and his crosswind gear seems to work on unorthodox principles. The reason it works is a very simple one but like many simple things it is difficult to explain.

To have a crosswind gear you have to have one made so that the wheels caster or swivel. Now, imagine one where the wheels caster freely. You wouldn't have any control on the landing run or while taxiing, none at all. It would be like having a field made out of oiled glass, perfectly slippery. So that's no good. It is clear that the wheels must resist castering, but if they resist a lot you don't have a crosswind gear. Now we can see the tough part of the problem.

Somehow or other John Geisse hit on the solution. Mr. Geisse has perfectly free castering wheels with no resistance at all. That's the first nutty thing, but this next one is a prize. The right wheel can caster all the way to the right with no resistance, no springs, no friction disks. But it will not caster to the left at all; that is, it cannot turn left of the center line, the straight ahead line. And the left wheel will caster all the way left but not at all to the right of center. Either wheel can toe out freely but neither can toe in.

You see how this thing works. When there is a wind from the left, the right wheel turns out without resistance. The resistance comes from the left wheel and it is just the right amount.

You can demonstrate the principle very easily yourself. Maybe your bedroom dresser has casters in its legs, and if it doesn't you can find an office chair that does. You are going to push on the side of the dresser in imitation of the force of a crosswind. Say you are going to push on the left side. You take the casters out of the legs on the left side, the near side to your push. No matter how hard you push you can't push the dresser over. The legs on the near side cannot function as a fulcrum, it would have to be the legs on the far side to act as such and they cannot because they offer no resistance at all, they just roll.

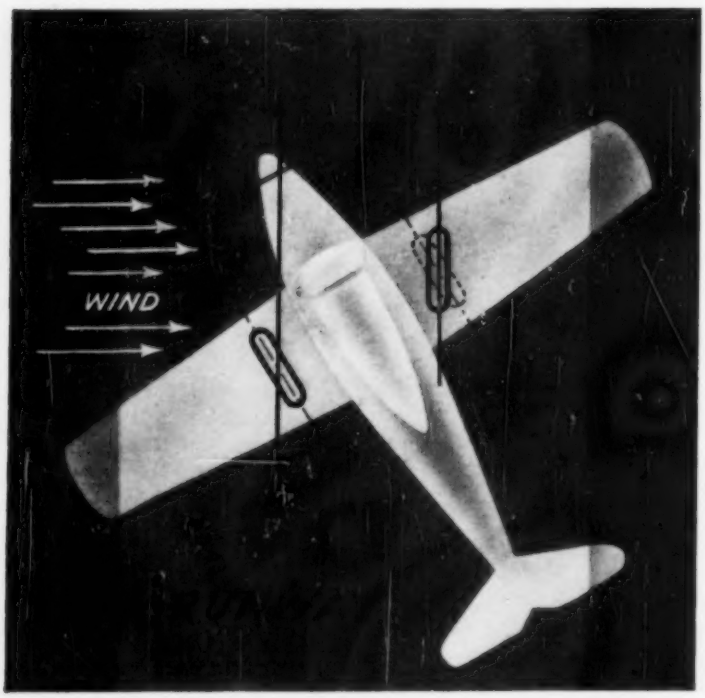
The Geisse gear was first tried by Bellanca on their *Cruisair*. This plane was already equipped with castering wheels — castering being restrained by rubber shock cords incorporated into the jack knives. In order to test the Geisse principles, the shock cords restraining toe-in were replaced with steel cable and those opposing toe-out were reduced in tension.

Another crosswind gear was modified on a twin-engine Beech. Toe-in was also effectively stopped. The result of both of these experiments were successful and encouraged Geisse to go ahead.

With a good crosswind gear you can now land with ease and good control on any strip in any kind of wind. With a stiff crosswind you don't have St. Vitus dance on the controls. You look like an expert, at least. You will never ground loop.

Best of all, should your motor stop motion you can land the best way in any field without having to find one that is more or less into the wind. You won't have to be a juggler when you land. This is going to save planes and fields too.

END



Key to principle of new gear is that caster wheels can toe out, not in, allowing plane to resist force of crosswind and prevent ground loop.

BEHIND THE IRON CURTAIN:

Three New Russian Jets

Workmanlike Bomber

Tupolev Tu-10 is new Soviet jet bomber comparable in size to the English Electric Canberra. It has a 70-foot span, is 60 feet in length and has probable top speed of about 535 m.p.h. Range may be around 2,000 miles.

New light bomber, fighter, trainer are reported with Soviet Air Force.

By WILLIAM GREEN

SINCE 1947 it has been a capital offense in the Soviet Union to publish even the most innocent details about Red military aviation which have not been passed through official censorship. Nevertheless, information keeps coming through the Iron Curtain (or over or under it) and careful research permits the assembly of the jigsaw pieces into a nearly complete picture.

By such methods comes information on the newest Soviet warplanes known to be in quantity production, plus a new jet trainer. These planes are the Tupolev Tu-10 jet bomber, the Yakovlev Yak-15B, and the UYak-15 jet trainer. This information, and the drawings of these planes, are presented exclusively in FLYING and have never been published before.

The dean of Soviet airplane designers, Lieut. Gen. Andrei Nikolaevich Tupolev, has produced the Tu-10 which is believed to be

UYak-15 jet trainer is two-seat adaption of Yak-15, one of earliest Soviet fighters which consisted of modified Yak-9 airframe and Junkers Jumo 004 jet engine.

the first jet attack bomber of original Soviet design to enter service with Red combat groups.

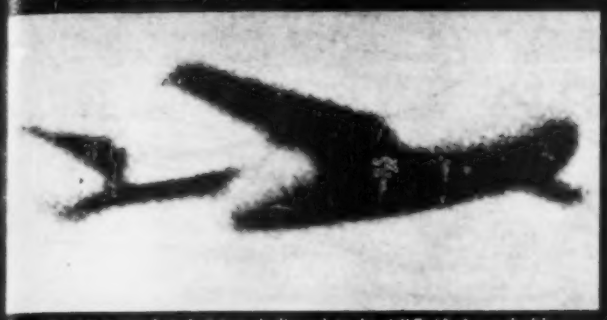
Tupolev, who redesigned the U. S. B-29 bombers which the Soviets seized at Vladivostok during World War II, presented a twin-jet forerunner of the Tu-10 three years ago at a Moscow flying display. This airplane, believed to be called the Tu-8 [see page 25], faded from the limelight after its brief debut and has not been seen in service since its initial showing.

With the appearance last May Day of a new development of the design came definite proof that Tupolev had been busy seeking a modern replacement for the standard seven-year-old propeller-driven Tu-2.

This new jet plane is the Tu-10. According to reports it is a fast, sleek, shoulder-wing bomber with a 70-foot (*Continued on page* 50)

Where does FLYING'S Soviet data come from? Read next page for one source —smuggled telephotos.

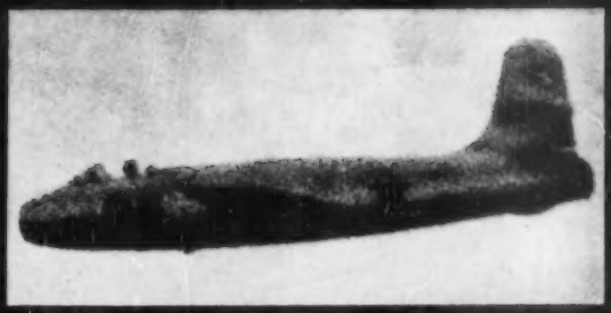
Yak-15B may be designation of this improved version of original Yak-15 jet fighter. It has new square-cut fin and rudder, much better visibility aided by tricycle landing gear. Not as fast as latest fighters, its light weight makes it maneuverable at altitude.



Small twin-jet fighter, believed to be MiG-13, is probably last of "pod-and-boom" jets which found early Soviet favor.

Three Yak 15's show this early jet to be result of marriage between Yak-3 airframe and German Jumo 004 turbojet engine.

MiG-9 is in service in quantities in the Soviet Union, carries heavy cannon, is designed for ground-support activities.



Yak-17 is sometimes called "Thunderjetovich." It is a contemporary of U.S. F-84 but is probably smaller and lighter.

Smuggled Photos Show Soviet Jet Progress

FROM time to time the editors of FLYING have been challenged on the authenticity of our information about Soviet warplanes. Here is one source of the drawings and silhouettes which have appeared in past issues of FLYING.

These pictures from behind the Iron Curtain are the first authentic unretouched photographs of Soviet jet warplanes which have ever been published in a western country. All of them were taken with the aid of telescopic lenses and smuggled out.

For FLYING readers there is nothing especially new about these Russian jets. But the photos are important in that they confirm the planes' existence and the accuracy of our artists' drawings.

These planes have all been flying for two or three years. They show marked influence by German designers. The plane called the Tu-8 is probably an early test model and is now believed to be redesigned and called the Tu-10. It has gained the Order of Lenin for 60-year-old Designer Andrei Tupolev.

Soviet jet designs have passed through three stages. First was the "pod-and-boom" type, like the MiG-13 and Yak-15. Then came the intermediate type like the Yak-17, with sleek lines but still having straight wings. Newest are the swept-wing jets, none of which is shown here. END

Twin-jet bomber, believed to be Tupolev Tu-8, has twin tail, long slender nacelles which indicate axial flow jet engines.

Il-16 is four-jet bomber based on German Arado 234, but is considerably larger. Suspension of engines is like U.S. B-47

"When that pilot blasted his plane around, three hours of back-breaking work had to be done all over again."

The Manager Talks Back

The author has been flying since 1930, has instructed movie stars, been manager of two airports, is now owner of B & G Air Service, Central Airport, Los Angeles.

By CLIFF BANTEL

Hey pilots! How's about you giving the operator a break? He has his share of troubles too.

I WAS P.O.'ed. We had just spent three hours sweeping the cement floor of a 100x100 foot hangar (that's 10,000 square feet to you) when the pilot of a twin-engined war-weary plane pulled up, swung the craft around, ran his engines up, pulled the prop pitch back and finally killed the engines with the mixture controls. There was all that clean-up job to be done over again.

Then, before I was able to cool down, a young hot pilot in a surplus AT-6 had come tearing down the taxiway towards the administration building at 40 m.p.h., ignored the attendant vainly trying to wave him to a parking place, and had blasted his plane around.

He had nearly blown some of the steady paying customers backward off their chairs, and had indeed blown over the empty chairs. And in the grand flourish of his arrival, he had also blown over a Foamite fire extinguisher parked near the gas pump. The extinguisher, of course,

shot off in several different directions at once, permitting no one to get near it as it snaked around.

As soon as the dust and spray had settled I did not race joyfully out to the AT-6, hop on the wing and sing out sweetly, "Yes sir! Can I help you?"

Do you blame me?

I've heard plenty of comments from pilots about the lousy service they get while visiting strange airports. On some occasions I have flown into fields where the service is not all it should be. Nevertheless, I feel that nine times out of 10 the visiting pilot does get the courtesy and service he is entitled to.

What I want to talk about is the times he isn't entitled to any.

It's high time we discuss how a visiting pilot should conduct himself in his dealings with operators—and not vice-versa.

For instance, there was the time I had just soloed a student. He was on his final turn into the field for his first solo landing. I was beaming proudly like an old mother hen watching her chick on his first trip around the barnyard. Suddenly I saw another airplane coming in from the opposite direction. "My Gawd, where did that guy come from?"

"They pull up in front of the office or hangar and yell, 'Hey, you! Where do you want me to park this thing?' "

Yep! You guessed it—a visitor. He didn't bother to fly over the field and check the wind or the direction of traffic. He just "figured" the wind was blowing that way and decided to come in. Fortunately my student saw him and clawed madly for altitude, spending the next 10 minutes circling the field in bewilderment, wondering what he had done wrong.

Then there is the lyrical type. He writes all sorts of interesting poems on the rest room walls. These literary gems usually take more time to remove than to put on.

Soap is a problem, too. If you put a liquid soap dispenser on the wall someone will knock it off. Bar soap placed on the wash bowls each day mysteriously disappears long before it should be used up.

We have a big red and white sign with a large red arrow pointing to the parking space reserved for visitors. It is placed so that it can be seen easily from either side of the cabin of a side-by-side plane. The sign reads "VISITORS PARK HERE."

Unfortunately, visitors seldom pay any attention to this sign. Unless a line boy or gas attendant happens to be standing smack in the middle of the runway waving them to the proper place visitors almost invariably taxi blindly past it. They pull up in front of the office and yell, "Hey you! Where do you want me to park this thing?"

Casual rubberneckers also present a problem. They come to watch our planes land and take off, and we would welcome them if that was all—it is good advertising to have them come. But unfortunately they don't all come to watch. Instead, it's we who have to do the watching.

If we don't, little Rodney will have the elevator covering stripped off with his Scout knife, while Imogene runs around on the stabilizer testing it for strength. Mama is also a problem since she is aiding and abetting all this. She will climb up on the walkway and in stepping off again she may drive her high-heels right through that hand-rubbed finish. If she slips and falls she will threaten to sue. If she or her kids do any damage she gathers up her little brood and melts into the crowd—leaving us with our repair job.

The other day a cross-country pilot flew in with a beat-up lightplane and came taxiing straight down the runway. He pulled up in front of the hangar and loudly called for gas. We put in a call for the truck, and took his order. "One gallon."

Where he could go on one gallon is more than I can imagine—or at least more than I care to put down on paper, but the number of one gallon orders we get is surprising.

We have what we call the airport hogs. They disregard the field traffic rules (*Continued on page* 52)

"It would be wonderful if we could give our customers all the service they get in a super-service station."

"Suddenly I saw another airplane coming in from the opposite direction. 'My Gawd, where did that guy come from?' "

CAP'S MILITARY MISSION

Big civilian agency is already charged with building a huge radio net, search and rescue work, emergency sub patrol.

By Maj. Gen. LUCAS V. BEAU, USAF

THE CIVIL AIR PATROL'S military mission has now been defined. The CAP showed how private pilots could help civil defense in World War II and today it is again being prepared for any emergency that might arise. It is working closely with the National Security Resources Board in planning its role. Regular officers of the United States Air Force staff CAP's national headquarters and serve as liaison to 52 Wing commanders.

As an auxiliary of the Air Force, the CAP has already been assigned specific missions as part of the strategy of protecting the home front. The jobs its members are expected to perform are:

- *To maintain a pool of at least 100,000 selected cadets trained in ground and preflight subjects to help furnish pilots for the Air Force.* We have not reached this goal, but we are moving steadily toward it. All of our units are actively promoting the cadet program, and an increasing number of boys and girls, ages 15, 16 and 17 are joining CAP. Through our aviation education program we are giving these youngsters a complete Air Age orientation, instruction in military procedures and the technical knowledge every pilot must have.

CAP cadets can attend two-week summer encampments at regular USAF bases. Each year outstanding cadets are selected to participate in the International Cadet Exchange. That means a flying trip to Canada, England, France, Switzerland, Italy or Portugal.

If you want to join our cadet program, call the CAP unit nearest your home. Or write directly to me at CAP National Headquarters, Bolling Air Force Base, Washington 25, D. C.

To develop an auxiliary radio communications net within the Civil Air Patrol geographic boundaries. Our communications net today is the largest in the world. In

Radio communication network already exists in CAP's nation-wide 500-watt chain. Lieut. Vern Fuller, CAP radio officer, operates Omaha station.

Submarine patrol spotted 173 enemy subs in World War II, is in better shape today to guard U.S. coasts.

Search and Rescue

CAP members conduct practice search mission (top) in Operation SARCAP. Pennsylvania's Frank Mitchell (lower) gets call to take part in the maneuver.

addition to 500-watt radio stations at each of our 52 Wing headquarters, we now have 7,000 smaller stations in the United States, Puerto Rico, Hawaii and Alaska. We are shooting for 10,000 in the next six months.

This communications system is ready for any emergency.

In the event of war our net of radio stations will be available to civil defense agencies. The only exceptions would be CAP stations near USAF bases, that would be needed for assistance in heavy military traffic.

To provide anti-submarine patrol along the coasts of continental United States, Alaska, Puerto Rico and the Hawaiian Islands, if required by the Air Force or the Navy; and provide patrol service along the southern border of the continental U. S.

The fact that our potential enemy has a large force of long-range submarines underscores the importance of the anti-submarine patrol mission. During the past war, CAP pilots flew nearly 100,000 patrol missions and spotted 173 submarines. They also logged more than 30,000 hours of border patrol along the Rio Grande. Many of the pilots and observers who flew these missions are still active in the CAP, comprising a reservoir of skilled men to lead our efforts should these missions be resumed.

To participate in search and rescue service as an auxiliary of the Air Rescue Service, MATS. At the present time, search and rescue activities provide the majority of training for CAP pilots and observers. During 1949 CAP flew more than 6,600 hours on missions requested by the Air Rescue Service. The figure for 1950 will be much greater.

The Air Force has directed also that CAP be ready to provide courier, mail and light transportation services; flights for radar test, tow target flights and non-combat reconnaissance flights.

All these missions are important in peacetime and will be doubly so in a war emergency. But they are not expected to tax all our men and equipment. The Air Force has assured us that we will be able to give most of our efforts to civil defense. (*Continued on page* 62)

"He's wrong," the professor told them. "It's a matter of mathematics. You will please note the vectors."

The Bank and the Bunk

What's all this nonsense about you not being closer to a stall when you go into a bank?

By HY SHERIDAN

Contributing Editor of FLYING

TOM JONES walked along, skirting the debris common to small airports, a hangar, a gasoline tank, a bosomy girl in blue jeans, and an equally bosomy *Twin Beech*. Like most pilots these days he was a man of many sides, his scientific side, his writing side, his business side, his flying side, and, of course, his outside and his inside, and it was the latter that was giving him the most trouble at the moment.

He wanted something to spoil his appetite, preferably food, and he set his course for the local calorie shop where the inner man could be refurbished with proteins for the belly and pros and cons for the soul, although pilots have been known to get along after a fashion without either bellies or souls. There was a time when they had to.

Tom hove in sight of the lunchroom that he was looking for.

He entered and sat down at a table where he could get his elbows out in case he needed some leverage. It was a typical airport lunchroom, a counter running along one side guarded by some stools, and a number of tables about the floor. Around the walls were hung a goodly number of signs which, some of the cynics said, were more frank than humorous. A couple of them read:

TRY OUR DOUGHNUTS WITH THE TENDER HOLES

TAKE A CHANCE ON OUR SURPRISE HASH—*NOBODY* KNOWS WHAT'S IN IT

Several pilots and mechanics were in the restaurant, most of them at the counter. A sunny if somewhat copious waitress named Polly leaned over the counter to put a dish down and the tall pilot that she was leaning across instinctively moved his cup of coffee back out of danger.

The tall pilot looked around (*Continued on page* 60)

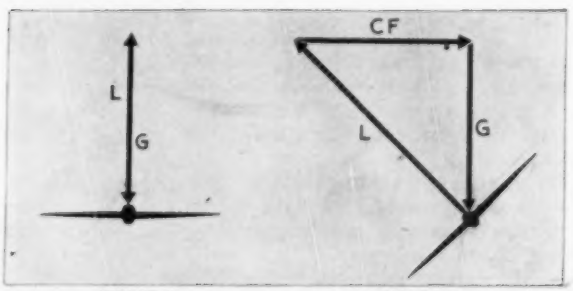


FIGURE 1 FIGURE 2

Author's diagram shows that when your airplane is banked you have an additional force to overcome than when it is flying straight and level. That is centrifugal force.

ILLUSTRATION BY FRANK ADAMS

Betty Skelton, FLYING columnist, shows large door for easy entrance to four-place Big X cabin.

Steve Wittman's HOME-BUILT LIGHTPLANES

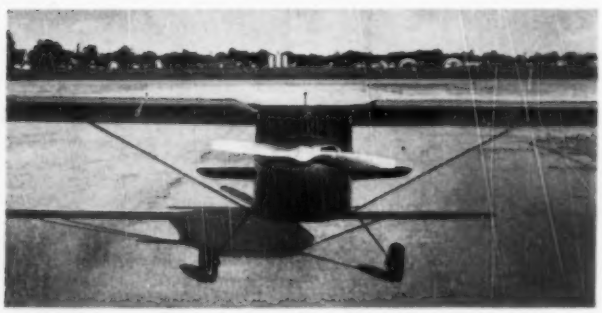
By BILL BRENNAND

Famous racing pilot's designs give outstanding performance for strut-braced monoplanes.

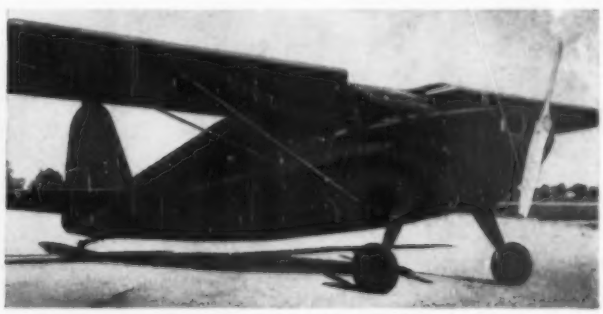
STEVE WITTMAN, the famous racing pilot from Oshkosh, Wis., is best known for his ability to design, build and fly racing airplanes. Not so well known is the fact that Steve has designed and built two extremely high-performing lightplanes that match or exceed the performance of most lightplanes flying today.

Like Steve's famed racers *Buster* and *Bonzo*, they are obviously home-built and lack the sleek finish that a factory might give them. But also like Steve's racers, they are rugged, workmanlike, and perform in a way that brings whistles of surprise from men seeing them for the first time.

The planes are a two-placer, called *Buttercup*, and a four-placer called *Big X*. Both are rather small, high-winged, strut-braced monoplanes—a little boxlike in appearance, typically Wittman in design. Steve has no plans to manufacture them, but considering every- (*Continued on page* 59)



Big X head-on shows high-wing, strut-braced monoplane with 29-foot wing span, special McCauley propeller and Wittman gear.



Top-notch performance comes from 150-h.p. Franklin engine. Big X cruises at 140, lands at 40 m.p.h., weighs 2,200 pounds.

Wittman's two-place Buttercup also looks conventional and is equally rugged and workmanlike. It has an 85 h.p. Continental engine that enables it to cruise at 130 m.p.h., land at 33 m.p.h. Even with small control surfaces it handles well at slow speeds.

Jet Torture

Pilots Jack Armstrong (left) and Lewis Kesterson give first-hand weather data to flight test engineer Earl Binckley (center).

Key men during flight are Lieuts. Jack Kennedy, Orville Coil and Ralph Broeske (left to right) who navigate the F-86 by radar.

Flying gear worth $4,000 will protect Capt. Hank Raschke on his flight. Equipment man Joe Antrim hooks up bailout bottle.

By Capt. L. J. KAPPEL, USAF

THE BRIEFING goes like this:

"Frontal conditions between Wright-Patterson and Scott Field, 350 air miles away, are reported ideal. Radar soundings indicate tops above 40,000 with thunderstorm squall conditions on entire route. Ice, rain, and hail, with moderate to severe turbulence, are reported within storm centers. Scott Field reports 100-foot ceiling, two miles visibility, to be lower within the hour.

"You will take off at 1600 with a combat complement of ammunition and fuel and proceed at maximum speed to the target. It's one of those everything to the firewall deals, for you have to determine the suitability of this particular airplane for that operation. You will climb at your fastest speed to 43,000 feet and head for Scott. Radar control will direct you through the roughest weather it sees on the scope. Scott control will pick you up within 50 miles of that base and your landing will be directed by GCA."

You blink, and swallow hard, and the briefing officer adds, smiling broadly, "This is just the lovely skunky weather we've been waiting for."

You and your F-86 *(Sabre)* swept-wing jet fighter are about to take this beating because you are part of the Phase 5 Project of the All-Weather Flying Division at Wright-Patterson Air Force Base, Dayton, O. The Project's job is to test you and your mental and physical equipment, and your airplane under the worst possible conditions.

It is the joking consensus of Air Force officers who have flown high-speed aircraft in all sorts of weather that Uncle Sam had better set up new pilot specifications. Mr. Ideal Test Birdman, 1951 model, needs far more than super standard equipment, and here is how some of the boys describe him:

"He has a full complement of teeth, all tempered steel. Twenty-20 vision isn't good enough. He should have periscope vision; be able to spot an amoeba at 30 paces and tell which direction it's going. His spine and rib cage are sponge rubber, his jaws plastic, his nervous system of platinum wire right down to the tiniest ganglia, and he is lined with tungsten. He has four hands, three feet and the brain of the Mark III, Harvard's (*Continued on page* 56)

Flight...

Author makes final check on Captain Raschke's plastic steel helmet visor that protects face in case of 600-m.p.h. bailout.

What a beating the test pilots and planes of Phase 5 take. They are deliberately sent into the worst weather it is possible to fly.

The Meyers 145 climbs 960 f.p.m. with a Continental C145-2 engine, has top speed of 166 m.p.h., cruises 145-155 m.p.h., range 600 miles.

By ED HOADLEY

AL MEYERS and his brother have been making successful airplanes for a long time. Almost every wartime civilian pilot remembers the famous Meyers OTW—a biplane with an aluminum fuselage, fabric wings and 145 h.p. Warner engine.

Hundreds of these biplanes were turned out for World War II training programs in the modern Meyers factory near Tecumseh, Mich., but after the war Al Meyers went to work on his dream-boat—an all-aluminum, low-wing fast lightplane.

The first model was powered with 125 h.p. but more recently the plane has been equipped with a 145 h.p. Continental engine. This was tested in the summer of 1948 by Jerry Davidson of the CAA. The Continental-powered "145" passed its tests and was certificated under Part 04 of the old Civil Air Regulations, instead of Part 03. This means that the ultimate load factor is 7.6 G's normal flight, and 4.5 G's for inverted flight. There are no acrobatic restrictions on the plane.

The airplane we checked was filled to capacity with gasoline, the baggage compartment carried 50 pounds weight, and Al Meyers and I in the cabin made a full gross load. Added to this were the extra wing tanks, and extras in radio and gyro equipment not ordinarily calculated in tests.

The instruments were familiar to me, with the flight group on the left side, and the engine group on the right. Each gadget and switch was clearly marked, save for "R" for radio, "S" for switch and "P" for parking brake. On the fuel switches, "M" was main tank, "R" for right tank, "A" for auxiliary tank, and "R" again, this for right auxiliary tank. There were too many "R"s and letters on the panel, but this will be corrected in later production.

I was impressed with the 360° visibility. Swiveling your neck and eyes can pay off in safety in this airplane. The flaps are two-position mechanical and quite simple to set for "take-off" and "land." The hydraulic landing gear mechanism is located between the seats, and may be set in up or down positions. A long lever, much like an old automobile brake lever, pumps the gear up or down. Eight strokes are required to retract the gear, while gravity will drop them. It is a good idea to hit the lever a lick or so when in down position, to insure locking the gear.

The Shakespeare "button release" throttle fooled me at first, as it locks in any given position. I pushed it forward and thought I had full power. My attention was focused on the runway at Bloomington, Ind., moving rapidly under us, and only after (*Continued on page* 48)

Meyers "145"

FLYING's CHECK PILOT

EDITOR'S NOTE

This series of articles is planned to help the pilot and prospective plane owner evaluate aircraft now on the market. Only aircraft holding a CAA Type Certificate are flown. The authors evaluate each aircraft through the eyes of the average private pilot who flies a plane for business or recreation.

Builder Al Meyers smiles from the cockpit of his well-known wartime biplane trainer.

The two-place cabin interior of the 145 is roomy and well-upholstered. Arrangement of the instruments is orderly, but the panel markings might be improved.

The Meyers 145 looks like an ordinary post-war airframe that has been stretched and lengthened, giving it a long symmetrical profile. The canopy "bubble" fairs into the fuselage, but gives the pilot 360° visibility. The aircraft is stressed for a 185-h.p. engine if needed.

THE CAA INSPECTOR MAKES HIS ROUNDS

By REESE WADE

CAA Agent George Ireland, center, examines pilot's certificate in spot check of C-46 aircraft of large non-scheduled operator.

Bent Volker, Maryville, Mo., answers questions of CAA agent Dave Detamore, right, about flight instruction test just completed.

THE PRIVATE PILOT was worried.

He was in a jam because he had flown his lightplane into the airport pattern in below minimum weather without asking for clearance by radio. His recklessness had forced an airliner to pull up suddenly and go around. He wondered what action the CAA Safety Agent would take.

George Ireland, the Agent, didn't know what he would do. He could not decide until he had all the facts, but meanwhile the matter became another detail in the busy routine of his day.

To get a picture of a CAA man at work for the readers of FLYING, I went along with Ireland on a non-scheduled tour of his district.

At the age of 36, Ireland has been with the CAA since 1940, and has accumulated 4,600 hours of civilian and military flying time since 1934. Flyers know him as an exceptionally skilled pilot. He learned to fly by working around a hangar until he got enough flying time for his ticket. After becoming an instructor he was office manager for a Cincinnati flying service, and later went to Aeronca as a test pilot and salesman. He is a major in the 303d Troop Carrier Squadron, Air Force Reserve, which he joined in 1939.

Ireland heads the Aviation Safety District Office Number One, Region Five, for the CAA. There are 14 district offices in Region Five, which includes Wyoming, Colorado, South Dakota, Nebraska, Kansas, Iowa and Missouri. Ireland works out of the headquarters office at Kansas City, Mo. His district is a 200-mile square and contains 1,060 private planes.

Despite his heavy schedule of administrative work, he likes to get into a plane frequently and see for himself how things are going out in the field. So, his pocket filled with notes—with lanky 36-year-old Dave Detamore and quiet Pat Baretta as companions—we took off on the first leg of my day with the CAA.

The rented *Navion* climbed into a blue sky laced with wispy cirrus clouds, and headed for Rosecranz Field, St. Joseph, Mo. The CAA rents planes from private operators when it is feasible.

Maintenance Agent Pat Baretta (left) examines cowling of Swift 125 for acid damage at Ottawa, Kan., airport while owner R. C. Cannady looks on.

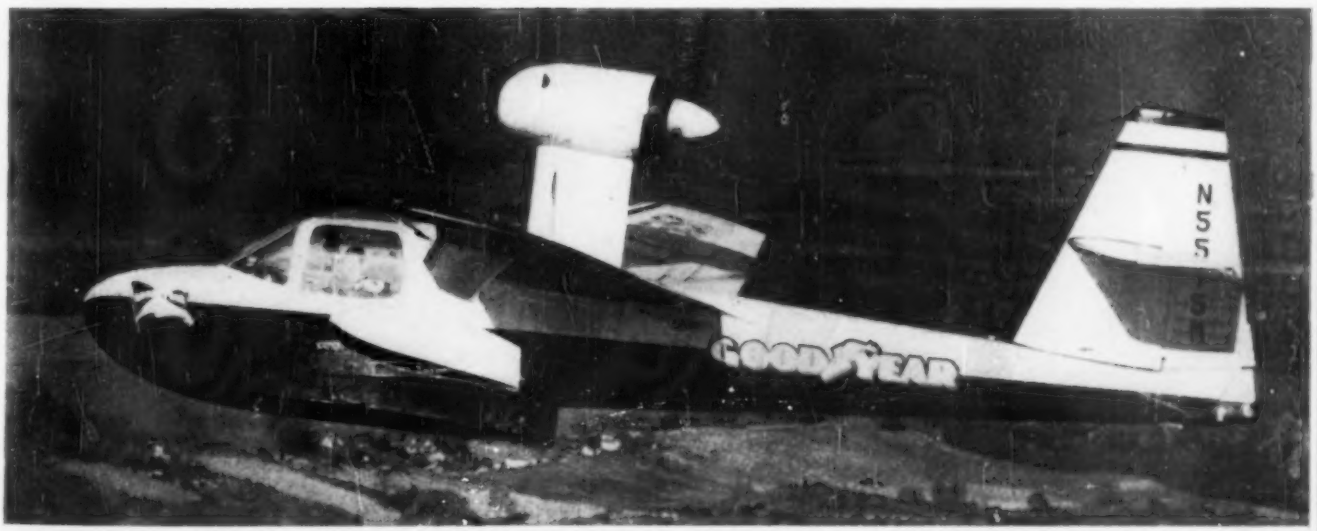
Frequently pilots or operators who talk with CAA men never know that George Ireland, for example, is a specialist in non-scheduled carrier operations; or that Dave Detamore, as an Airman Agent, is a specialist in all field activities pertaining to certification of pilots, navigators and schools. Pat Baretta, a Maintenance Agent, is an experienced specialist in all forms of aircraft maintenance and con-

(*Continued on page 53*)

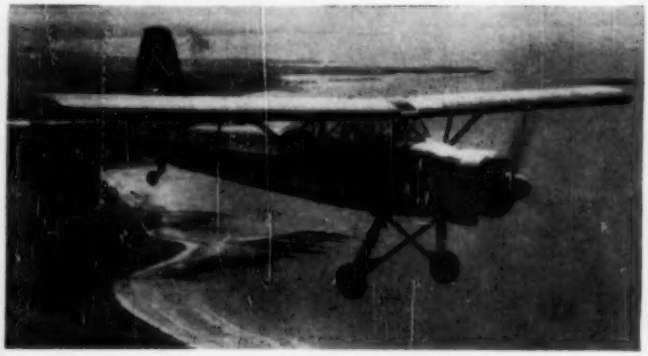
HAVE YOU SEEN?

Folding doors on North American B-45 permit dropping bombs at "over 500 m.p.h." for first time. Jet warplane can carry over 10 tons of bombs.

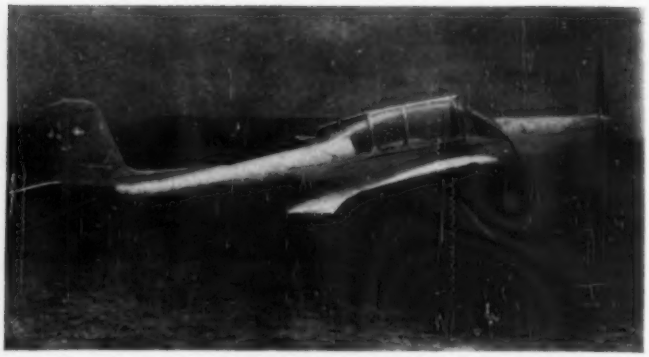
Fouga Cyclope is French jet lightplane developed from Fouga Sylphe (former Cyclone), is powered by Turbomeca Pimene, has top speed of 218 m.p.h.



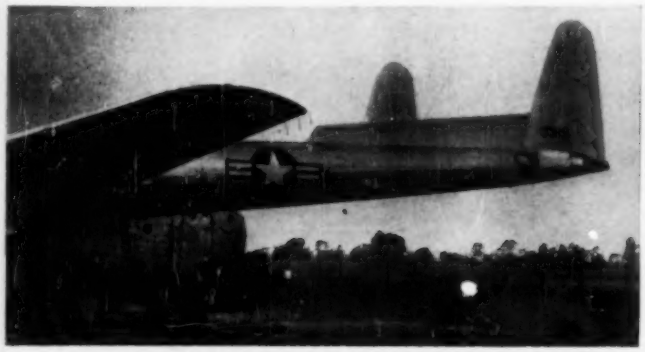
Four-place amphibian developed from GA-2 (Duck) is being demonstrated to armed services and CAA by Goodyear Aircraft Corporation. It is four-place, all-metal pusher with 185-h.p. engine. Craft has planing tail hull, cross-wind landing gear, partial leading edge slots.



Prestwick Pioneer II by Scottish Aviation is five-placer designed for short-field operation, has 520-h.p. engine, cruises at 151 m.p.h.

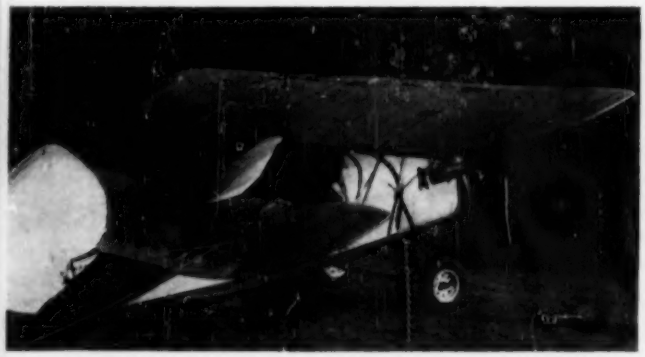


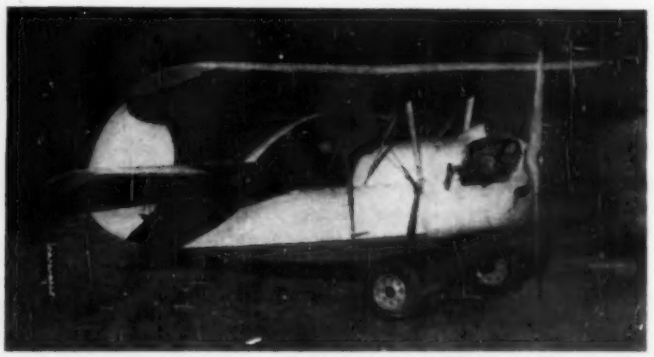
Morane-Saulnier M.S. 730 No. 01 is French two/three-seat basic trainer powered by a 195-h.p. engine, to be boosted to 240 h.p.



Fairchild C-119B (Packet) is test plane fitted with experimental fins to replace fin area lost in dropping fins below tail unit.

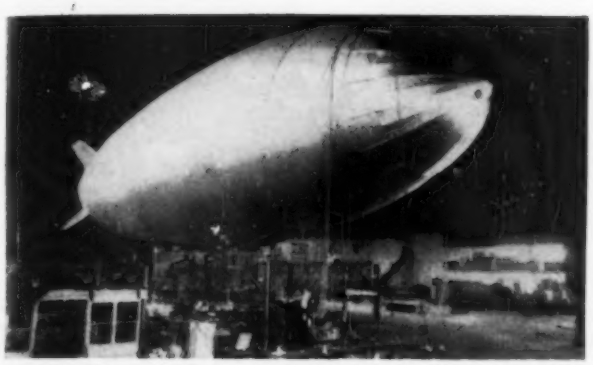
Kaman HTK-1 is new helicopter trainer for which Navy contracts have been let. It carries two, is powered by 240-h.p. Lycoming.



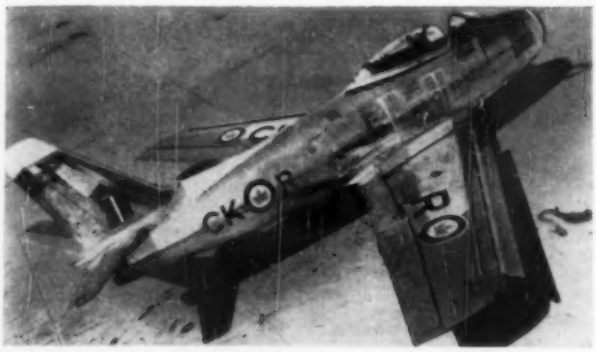


Ultra-light airplane is this tiny craft recently constructed in Belgium. It is Henri Mignet's *Pou de Ciel* and is powered by only a 5½-h.p. flat twin engine. Note unusual arrangement of wings in tandem, and generally short-coupled appearance. Designer is now working in Argentina.

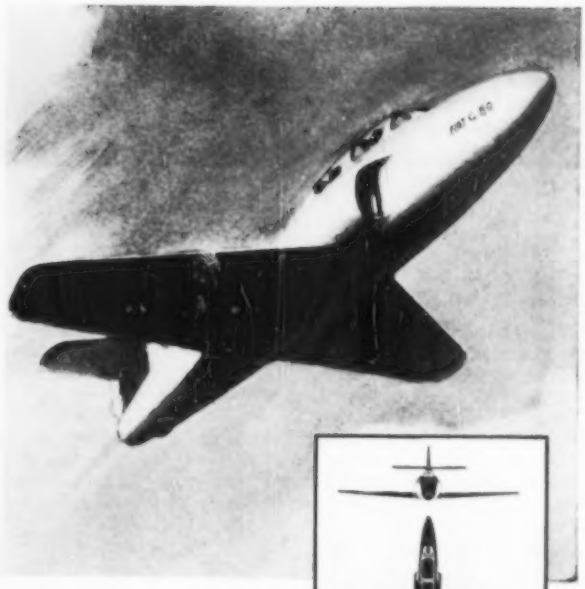
Russian IL-10 captured intact at Kimpo Airfield, Korea, is ground support plane, successor to World War II Stormovik. Top speed is 280 m.p.h.



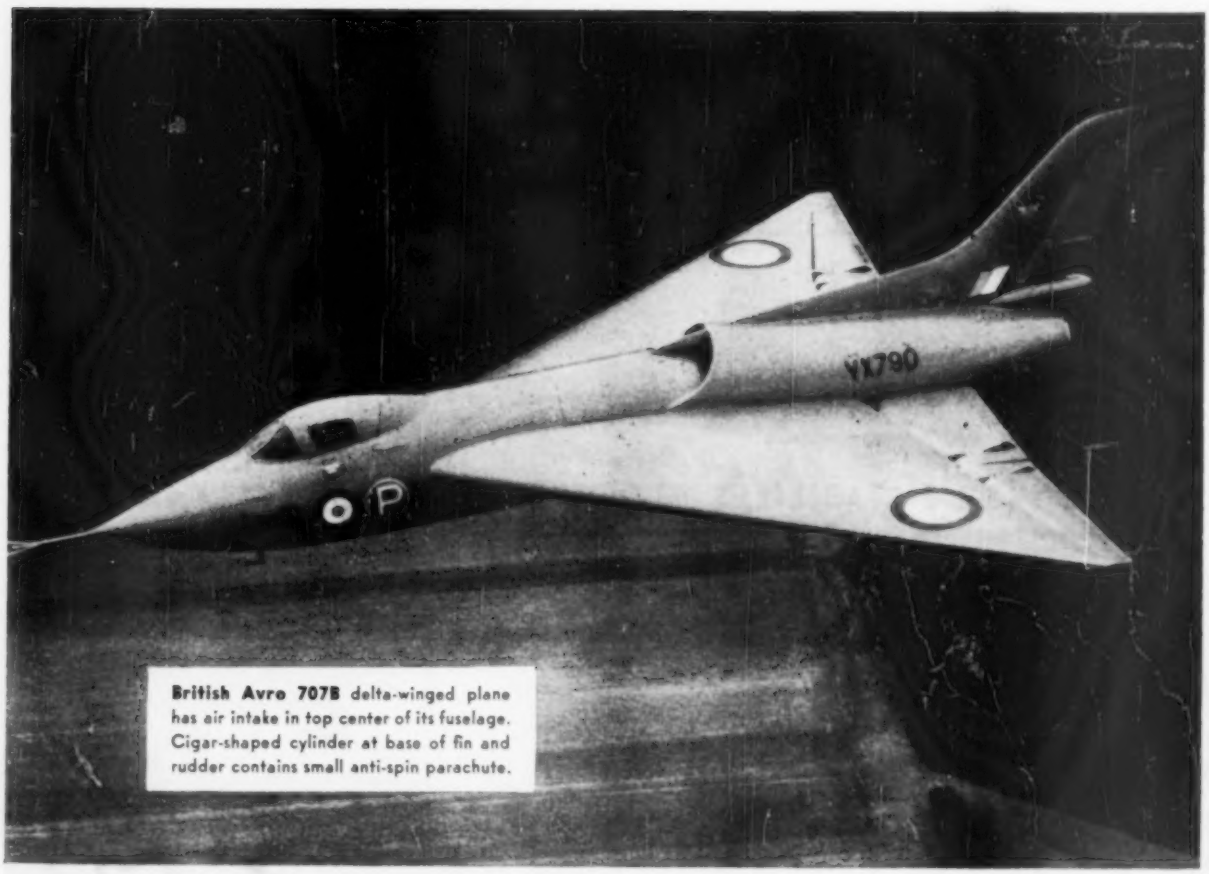
World's largest blimp being built by Goodyear for anti-submarine patrol will carry 14 men, fly up to 75 m.p.h., cost $5,000,000.



First Canadian-built Sabre has made initial flight. Later versions will be driven by powerful Avro-Canada Orenda jet engine.



Italy's first post-war jet is Fiat G-80, a two-place fighter-trainer. Prototype is powered by D.H. Goblin engine of 3,500 pounds static thrust. Craft has 840-mile range, top speed of 547 m.p.h. Future models will probably be powered by Nenes.



British Avro 707B delta-winged plane has air intake in top center of its fuselage. Cigar-shaped cylinder at base of fin and rudder contains small anti-spin parachute.

The Lear Automatic L-2 Pilot

Progress in aviation is not always achieved at the same even rate. Sometimes it inches along with very little change; other times it picks up speed and travels at a gallop. And on very rare occasions—as now, for example, with the perfection of the Lear L-2 Automatic Pilot an accomplished fact after seven long years of designing, engineering, and testing—aviation suddenly leaps ahead into *an entirely new era* of flight safety and simplicity.

Yet, new as it is, the Lear L-2 Autopilot is by no means untried—by no means merely a promise of things to come. Already installed in Navions, Bonanzas, Cessnas, DC-3's, Lodestars and Twin Beeches, and with many thousands of customer-hours behind it, the L-2 autopilot is today a fully proved, widely accepted, readily purchasable *reality*.

WHAT WILL IT DO? (1) The L-2 will hold your airplane laterally and longitudinally level in fair weather or foul, in turbulent air or smooth, without requiring a finger or foot at the airplane's controls. (2) It will hold your airplane on any course you select and hold it automatically, accurately, and smoothly. (3) It will enable you to alter this course at will in a smoothly coordinated, automatically executed turn. (4) It will automatically maintain your airplane in any desired safe angle of climb or descent. (5) It will automatically maintain your airplane in any desired safe climbing or descending turn.

In other words, the L-2 is both a *stabilizing* and *maneuvering* automatic pilot, operating on all three axes—roll (aileron), pitch (elevator), and yaw (rudder).

NOW LET US TRANSLATE these five basic functions of the Lear L-2 Autopilot into the actualities of everyday flying. What does the automatic flight control of the L-2 mean to you, the private owner or business executive, who depends upon his plane to provide the maximum in safe, efficient, and pleasurable transportation?

It means that all you have to do is turn on the L-2 engage switch and then sit back comfortably for the entire trip, regardless of its length or the weather you encounter, without once touching the airplane controls except for the actual takeoff and landing. (As a matter of fact, the sensitivity of the L-2 is such that it will even take off and land your plane automatically, although it is not designed or recommended for this.) On a long trip the constant muscular effort and nervous strain of manually controlling your plane tax your energy and mental alertness to a considerable, sometimes dangerous, degree. Relieved of this fatiguing burden by the L-2, you will remain physically and mentally relaxed for the brain work that safe flying requires. You will be able to fly many more hours a day than you ever did before and still feel refreshed enough to go about your business when you land.

IT MEANS SMOOTHER FLYING and consequently less airsickness for your passengers and greater comfort for yourself. In rough air the L-2 checks the airplane's rolling, pitching, and yawing movements *before* they develop any appreciable magnitude.

It means that while the L-2 flies your plane, you will be completely free to converse with your passengers; handle your radio communications; write down the weather sequences and winds aloft; make entries in your position log; figure your ETA's; re-plot your course on the chart in case of bad weather; attend to your numerous duties after takeoff and before landings; keep a lookout for other traffic, etc. And it means, furthermore, that you will be able to do all these things leisurely, undistractedly, and accurately.

IT MEANS GREATLY INCREASED safety while you maneuver at low altitude and low airspeed to observe roof markers, check points, strange fields, runway conditions, wind socks, etc. While your attention is outside the plane, the plane can be maneuvered automatically and safely in perfect turns and constant altitude.

It means greatly increased accuracy in navigation. Most navigational difficulties are caused not so much by poor calculation as by the poor steering brought on by compass errors, rough air, restricted visibility, and pilot fatigue. The L-2 will hold an accurate course in the roughest air.

It means that you fly faster and use less gas because you are able to fly straighter, because you are able to hold your altitude and maximum cruising speed once you have established them, and because you are able to maintain efficient constant-rate climbs and descents.

IT MEANS COMPLETELY AUTOMATIC control when emergencies occur. For example, in case of engine failure in multi-engine aircraft, the L-2 will instantly correct for the yaw due to unbalanced power and automatically hold the plane straight and level. An owner of a single-engine airplane equipped with an L-2 Autopilot claims that it recently saved his airplane by taking over the flying when an engine fuel-pump failure required his full attention to pumping gas by hand.

The L-2 can mean the difference between life and death for the VFR pilot

THE L-2 STABILIZES YOUR PLANE AUTOMATICALLY

(Amount of deviation shown here has been deliberately exaggerated. In actual practice, the L-2 prevents deviations before they develop.)

When a gust hits and a wing goes down...

the L-2 goes into action instantly, applying exactly the right amount of corrective control.

If for any reason the plane is thrown off the established pitch attitude...

the L-2 elevator servo brings it back. Necessary trim changes are made automatically.

If the plane deviates by even a single degree from the established heading...

the L-2 rudder servo immediately applies a proportionate amount of correction, but without lag or overswing.

is here... and it's great!

accidentally caught off base in instrument weather. Although Lear does not recommend intentional instrument flying with the L-2 unless you are properly licensed and equipped for such flying, it is a known fact that practically every pilot sometimes gets into conditions beyond his equipment and training. However, bad weather makes little difference to the L-2—it flies just as well in zero-zero conditions as it does in CAVU. A test pilot flying a Bonanza equipped with a Lear L-2 Autopilot deliberately entered a cold-front thunderstorm and came out on exactly the same heading he went in, although the hail-laden currents within the storm were so violent that the paint was stripped bare from the leading edge of his wing. No structural damage occurred, however, because the L-2 kept the plane in a constant attitude—no dives, no high "g" pull-outs.

It means greatly increased peace of mind while flying at night, which can also be treacherous to the non-instrument pilot.

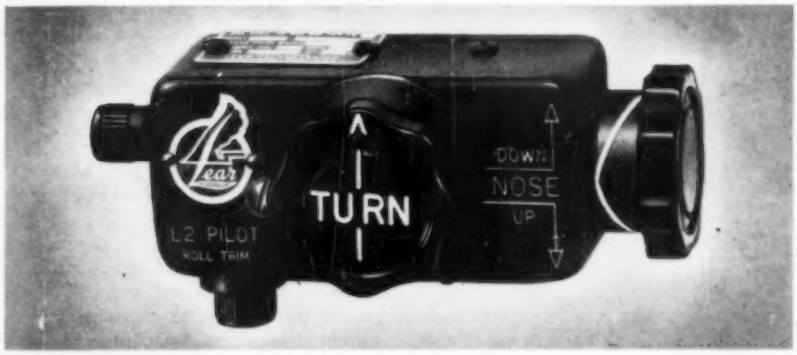
FOR THE QUALIFIED INSTRUMENT PILOT the L-2 has as many advantages as it has for the fair weather pilot. It means, first of all, relief from the strain and hypnosis dangers of prolonged instrument flying. With all due respect to your ability, there isn't a pilot in the world who can do as good a job on the "gauges" as the L-2.

Flying with the L-2 takes most of the grief out of radio range problems, beam bracketing, and ILS approaches. To change course you merely rotate the "Turn" knob on the Controller. Your plane turns smoothly and automatically, and stops turning exactly—but *exactly*—where you want it to stop. To descend, you merely rotate the "Pitch" knob on the Controller for the desired rate of descent, and the L-2 will bring you down from the markers strictly according to the book.

"Holding" over a fix with the L-2 is simplicity itself. You do it just as the airlines do—with a minimum of effort and at exactly the altitude and position at which you are supposed to hold.

THE L-2 IS SIMPLE TO OPERATE, easy to install, and weighs less than 30 pounds (without gyros). The price of the L-2 is $2990, and includes a set of excellent directional and horizon gyros, which replace the ones you normally use for visual reference. The L-2 also contains provisions for adding the Lear Automatic Approach Coupler and the Lear Automatic Altitude Control.

With the Lear L-2 Autopilot in your plane your experience of flying will have no resemblance to anything you have known in the past. You will discover air transportation at its best, its safest, and its most enjoyable. You will certainly want to know more about this remarkable instrument, so we have prepared a comprehensive book entitled *The Lear L-2 Autopilot* which describes its operation and functions in full detail. We invite you to send for your copy today—free, of course.



The L-2 is unbelievably easy to operate. Turn on the engage switch and your plane is under complete stabilized control on all three axes! To make a turn, simply rotate the "Turn" knob in the desired direction. Stop the turn by moving the knob back to the neutral position. To climb, just roll the "Pitch" knob backward. To descend, roll it forward. The L-2 can be easily overpowered by the pilot, and instantly disengaged by the flip of a fingertip switch on the control wheel. Automatic trim tab control keeps the plane constantly in trim on the pitch axis, thus assuring a normal, no-load condition on the elevators whenever the L-2 is suddenly disengaged to permit manual flight.

LEAR INCORPORATED
GRAND RAPIDS, MICH.
LOS ANGELES, CALIF. • ELYRIA, OHIO
Export Representatives: Lear International Export Corp., New York, N.Y.
Canadian General Electric Company, Limited, Toronto, Canada

THE L-2 MANEUVERS YOUR PLANE AUTOMATICALLY

You get a smoothly coordinated, constant bank turn by simply rotating the "Turn" knob on the Controller. A great aid to accuracy in contact flying—invaluable for instrument and night flying.

The L-2 will hold your plane automatically in a safe constant-rate climb or descent, at the same time maintaining a fixed heading and a wing-level attitude.

With the L-2 you can execute automatically controlled climbing and descending turns—a feature you will appreciate especially after takeoff and on landing approach.

I Learned About Flying From That! NO. 134

Lieut. Comdr. H. H. "Spin" Epes, II, is a squadron commander (F4U's) aboard an Essex-class carrier in the Pacific. He flew Curtiss SOC's and Vought *Kingfishers* early in World War II, later became the exec of a composite squadron flying *Wildcats* off a baby flat-top in three Pacific invasions. Epes holds the DFC and six air medals and is credited with shooting down two Japanese aircraft—the first two he had ever seen.

He watched helplessly as the plane and his life jacket slowly floated out of sight.

By Lieut. Comdr. H. H. EPES

As told to CHARLES L. BLACK

OFF THE KOREAN COAST a few months ago some of the pilots in my *Corsair* squadron had to re-spot planes on the flight deck of our Essex-class carrier. We weren't flying a mission—just taxiing the planes to a new location on the deck.

As I stood supervising the operation, I noticed one of the squadron's new ensigns was not wearing a life jacket while taxiing his aircraft. In my squadron, I have a rule that whenever a pilot moves a plane on the flight deck he wears a Mae West.

Later, when I reprimanded him, I got the impression that he considered me a bit of an old lady for creating such rules.

"Bob," I said, "come down to my stateroom after supper tonight. I want to tell you a story . . ."

* * *

Squalls buffeted my plane that afternoon back in March, 1943, as I left Natal, Brazil, bound for my ship halfway down the Brazilian coast at Bahia. The ceiling was low—but the old Vought *Kingfisher* chugged along at an even 100 knots while I relaxed, waiting for the five-hour flight to end.

I was alone, no one was monitoring my radio, and there was little to do except make an occasional check on the coastline, about five miles off my starboard wing.

After two hours, just as I'd passed through a heavy squall, my engine suddenly began to backfire and lose power. I throttled back, and at just better than idle r.p.m. it caught smoothly. But when I tried to inch it back up to cruising power I got another backfire and sudden decrease in r.p.m. Checking the instruments, I found the cylinder head temperature almost up against the peg—and analyzed the difficulty as a broken valve spring. I figured the valve was stuck in the open position, allowing the exhaust gases to detonate the mixture in the intake manifold.

I couldn't maintain altitude and there was nothing to do except swing around into the 25-knot wind and land on the choppy seas. The waves were high and I took a couple of rough bounces, but settled into a wave trough with no apparent damage to the *Kingfisher*.

At that point, I was about five miles off shore—and 40 miles from the nearest port, Recife. I looked over to catch sight of the shore but could barely see the tops of hills when the plane rose on a wave. Most of the time I could see nothing except water and overcast skies.

I taxied on the water toward what I thought was Recife, paralleling the coastline because of the jagged coral reefs. The sea was rough, and my progress snail-like. The routine got monotonous: the prop would plough into a wave, the engine would splutter and almost stop, the low r.p.m. would pick up again—and the prop would plough into another wave.

If I tried to increase power, (*Continued on page* 64)

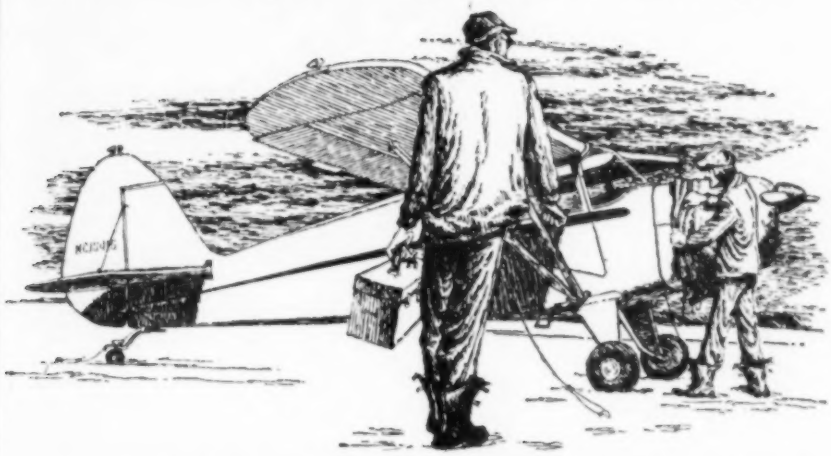
PLANE FAX

Quick picture of

EUGENE AIRPARK, OREGON

Within city limits... no tie-down fee... weather service, repair shop, chartered flights, student training... ALL STANDARD OIL PRODUCTS.

How to keep idle planes healthy

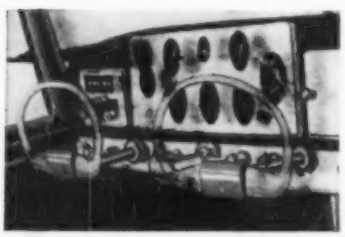


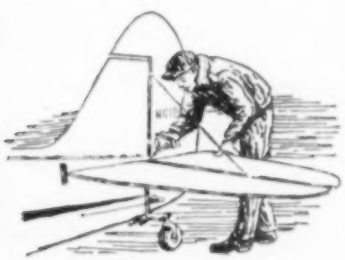
Keep engine well lubricated

"Engine trouble often follows a period of idleness," reports Max Green, owner of Green Flying Service at Eugene Airpark, "because ordinary oils run away from engine parts as soon as the motor stops. Moisture then condenses on the bare cylinder walls, causes rust and lets pistons grind and scrape when you start up again. We don't have that trouble here because all of us use RPM Aviation Oil . . . it clings to all metal surfaces, hot or cold, summer or winter."

Guard instruments against rust

"When you leave your plane out in the sun, the lubricant around your gyro and other instrument bearings can evaporate. That can lead to rust which may throw off your readings the next time you're upstairs. You can reduce this hazard by using RPM Aviation Grease No. 5."



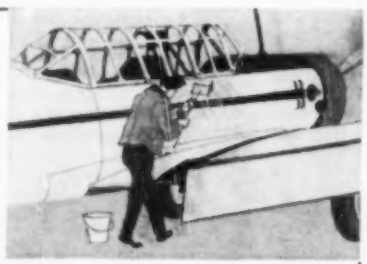


Lubricate control surfaces frequently

"Elevator, aileron and rudder hinges should be inspected and oiled even when the plane is stored in winter. RPM Aviation Instrument Oil is the ideal lubricant for all parts exposed to weather."

TIP OF THE MONTH

Clean outside surfaces often



"Mud, dirt and salt may accumulate when you don't use your plane . . . and seriously affect flight characteristics. So, it's wise to clean control surfaces, trim tabs, hinges and other parts often."

Max Green, one of the famous "Flying Greens," a family with 19,000 flight hours.

CHEVRON AVIATION GASOLINE

RPM AVIATION OIL

Standard Oil Company of California

AIRCRAFT OWNERS AND PILOTS ASSOCIATION

AOPA NEWS

Aircraft Owners and Pilots Association is a service organization for the private pilot or aircraft owner. AOPA's full time staff is devoted to helping the individual pilot. Its aim is: "To make flying more useful, less expensive, safer and more fun."

Headquarters are: 15th and New York Aves., Washington 5, D. C. Members also receive a special AOPA edition of FLYING, newsletters and confidential aviation data. Opinions expressed in this column are not necessarily those of FLYING Magazine.

RADIO REVISIONS

Air-to-ground radio procedures are being revamped by four CAA chief controllers who are also pilots. The four controllers are Martin V. Black (AOPA 72368), Birmingham, Ala.; Jack W. Scott, Baton Rouge, La.; Anthony J. Fitzgerald (AOPA 25347), The Dalles, Ore.; Grant F. Jacobsen, Chicago, Ill. CAA selected them to cut down all the unnecessary procedures and rewrite those left—from the pilot's standpoint.

Martin Black is the CAA controller who devised a register of all locally-based planes, pilots and equipment to speed up flight-plan filing. Pilots on the register need to make only one radio call to tell controller of destination. CAA personnel fill in the rest of the flight plan from Black's register.

SEAPLANE FINES

Two AOPA members were recently fined by local authorities for landing seaplanes on lakes or rivers. AOPA cautions all members with seaplanes to investigate before making landings as such arrests are legal.

If members knowing of such restricted areas will advise us of their locations we will be glad to publicize them.

AOPA ASHTRAYS

Special AOPA ashtrays are now available to members from national headquarters. These handsome ashtrays are

colored in red and gold and decorated with the AOPA shield in gold. Special price to AOPA members, $2 each.

MAP DISCOUNT DROPPED

Quantity discounts on maps were dropped November 1, 1950, by the Coast and Geodetic Survey in an effort to stop the widespread sale of obsolete aeronautical charts. The discount system permitted anyone buying $10 worth or more to get an automatic one-third discount. Now, only official C&GS distributors get discounts. The new program makes the AOPA Map Service doubly valuable to AOPA members as many airports are expected to discontinue buying charts in quantity now that the discount has been dropped.

Through the AOPA Map Service, members can subscribe to WACs and sectionals and automatically receive chart revisions as they're issued. Individual map orders are also filled by AOPA. Members interested in the Map Service can get special order blanks from AOPA headquarters.

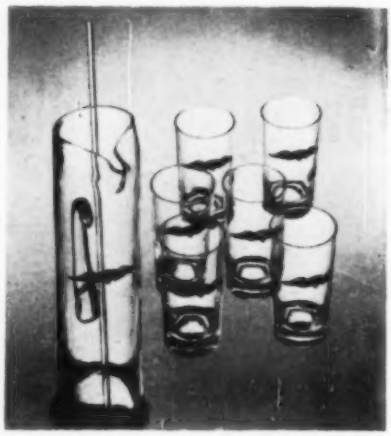
AOPA ATTORNEYS

AOPA's list of aviation attorneys has grown to 125. To date, however, the following states are not yet represented: Mississippi, Idaho, Maine, New Hampshire, Vermont, Rhode Island, Delaware, Maryland, South Carolina, Arizona, Utah, Wyoming, Montana, Oregon, North Dakota, South Dakota, Minnesota, Kentucky.

If you are an attorney and an AOPA member and would like to receive aviation legal news from time to time, please drop a line to AOPA national headquarters and we'll add your name to the list.

PITCHER SET

Pictured below is the new AOPA pitcher and glasses set now available to members. Each piece is decorated with the AOPA wings in black and gold. The



set comes complete with pitcher, stirrer and six full sham highball glasses for only $7.

AOPA Members Save On New Americo Aviation Insurance Merit-Rating Plan

A revolutionary type of aviation insurance service has just been made available exclusively to members of the Aircraft Owners and Pilots Association by the American Mercury Insurance Co., AOPA's insurance consultants. The new service is a merit-rating system for aircraft hull insurance.

Under the new system, which already has gone into effect, AOPA members' planes will be insured after a series of credits and debits are checked by Americo in connection with each individual airplane.

This system automatically gives the planes and pilots with the best safety record a better insurance rate than those with less-satisfactory records. This means that the AOPA member with a good safety record will actually profit financially and will not be penalized for the overall accident record which normally is used as the basis for rates quoted by the average insurance company.

In announcing the revolutionary plan, G. C. Whalen, Americo president, pointed out that AOPA members presently insured under the old system still are getting a substantial saving over existing rates of other companies offering aviation coverage. He added, however, that the merit rating system now assures members with good safety records of even greater savings.

In the future, AOPA members' aircraft to be insured by Americo will first be subjected to a "check list" covering fixed credits and debits. Each plane's total "score" will automatically determine the premium rate to be charged. And even if a plane insured under the new system is charged the maximum rate, that rate still will be substantially lower than current insurance rates with other firms.

Americo's merit-rating plan allows credits for items like these:

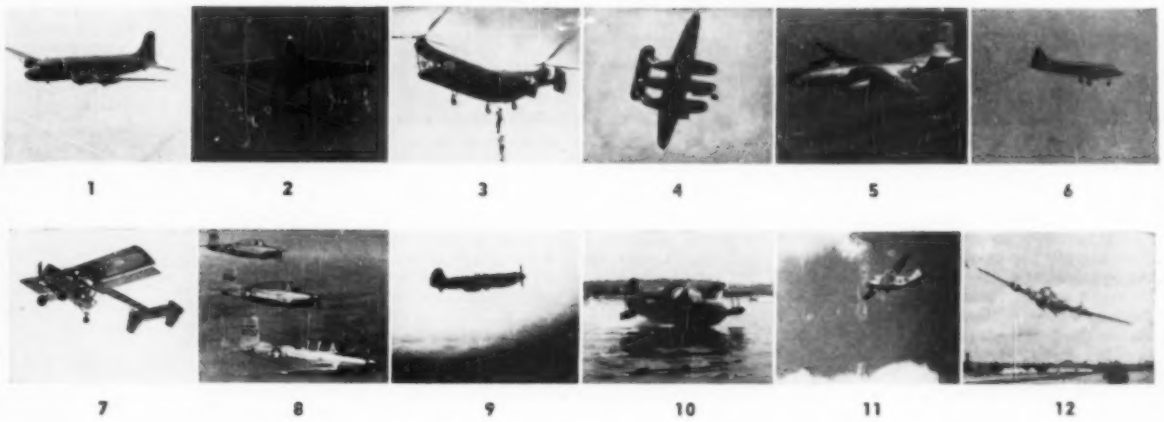
Pilot experience, fire-resistive hangar where the plane is permanently stored, geographic location, AOPA-approved stall-warning instrumentation, previous accident record, owner's occupation, and the average number of hours per year that the aircraft is used.

Debits are scored against planes being flown by students, seaplanes or amphibians, home airports not conforming with minimum CAA classification requirements, and for the difference between the plane's list price and its insured value.

Commenting on the new merit-rating plan, J. B. Hartranft, Jr., AOPA general manager said:

"We are particularly pleased to have available to AOPA members so progressive an insurance program. It is one more added service to members that we feel will make their flying more economical."

CAN YOU SPOT THEM?



1 2 3 4 5 6

7 8 9 10 11 12

(1) Douglas C-54 Skymaster, (2) Dehavilland 325ZN Vampire, (3) Piasecki HRP-1 Rescuer, (4) Aero-marine SC 1021, (5) North American B-45, (6) Hyushin Il-12, (7) Boeing L-15, (8) Beech YT-34, (9) Vanguard VAC-3, (10) Grumman G-21B Goose, (11) Chase XCG-15A, (12) Avro Shackleton G.R. Mk. 1

Elephant-Skinned B-47

(*Continued from page* 18)

certificate and clearance from the Air Materiel Command. Most information about the plane is restricted but this story is not much concerned with specifications and performance data but with some of the production problems involved in manufacturing such a big fast airplane.

The B-47, for example, has two main compression ribs, one on each side of the fuselage. This rib is in the butt end of each wing and sustains the entire weight of the wing and its attached six jet engines. It must be big and strong and it is. Each rib weighs 225 pounds finished.

But to arrive at that finished weight, Boeing workers start out with a solid billet of aluminum weighing 1,225 pounds. The first main compression ribs manufactured had to be hogged out of this solid billet and took 700 man hours each on a Keller duplicator. Why? There is not a forging press in the country big enough to forge it in one piece.

Boeing subcontracts this job to Wyman-Gordon, a Massachusetts forging company, which has an 18,000-ton press—the largest in the country. But even this press is able to forge only half of the rib at a time. So the rib has to be made in two pieces. It is a revealing sidelight that the Nazis had two 30,000-ton forging presses in the Krupp works and that the Russians have both of these now—together with plans for a mammoth 50,000-ton press.

The aluminum in the B-47 is 75ST-6, and 75 per cent of the B-47 parts are made from this metal. An index of how far we have travelled in recent years is that the B-47 could not have been successfully built from the 24S aluminum of World War II because the plane would then weigh 15 to 20 per cent more, cutting down range.

The wing skin varies in thickness from five-eighths of an inch at the butt to three-sixteenths at the tip. All this skin is bought at in three thicknesses and tapered down by mammoth precision skin mills. The thickest section of B-29 skin by contrast was three-sixteenths of an inch and ran down to only .032 inches. None of it, of course, was tapered.

The two Cincinnati Hypro skin mills used to plane down the excess material weigh 86 tons each and cost $230,110.43. Here the aluminum sheets needing taper are held down to vacuum plates that eliminate hold-down clamps. One mill tapers the skin thickness and the other trims to the desired size and shape.

To form such parts, Boeing uses a rolling mill like that required to contour the steel plates of ocean-going ships. The precision required in these operations is fantastic. The rolling mill contours the skin within 20/1,000 of an inch or less of its final shape. Each roll of the mill is polished to 50 micro-finish.

The final skin is as smooth as a pane of glass. Not even the rivet holes can be felt. All bolts are counter-sunk, and in order to protect the surface while work is in process, it is kept constantly covered with a protective paper. Only 5/1,000-inch interruption of surface smoothness is allowed in skin joints.

One of the precision machines that makes this possible is the Pratt & Whitney jig borer, electronically controlled and capable of maintaining accuracy within one-thirtieth of the diameter of a human hair. This machine is used to locate and drill holes for the vital locating pins on the B-47 tools and jigs. Once the first locating pin hole has been bored the electronic controls of the machine can be set automatically to locate and bore any number of succeeding holes. This machine is kept in an air conditioned room under a constant temperature of 68°.

Before World War II most body skins were formed by male and female dies in a stamping process. The stretch press used at Boeing Wichita now eliminates the female die. It can form the 75ST thinner gauge body skins without leaving the wrinkles that the World War II methods did. The skin is heat-treated, then put in an ice box, and is then malleable and can be worked for 20 minutes before it must be allowed to set. The giant Hufford sheet stretch press literally stretches and wraps the aluminum around the Kirksite or plastic dies. It is the largest single piece of equipment moved into the plant, weighs 75 tons, and required a special 12-wheel flat car to haul it to Wichita. Its cost of $164,967.07 installed goes a long way to explain why it required an investment of $13,000,000 in machinery and facilities to ready the Boeing-Wichita Government-owned No. 2 plant for B-47 production.

The Gray milling planer is three machines in one—a combination planer, miller and jig borer. It is capable of drilling precision holes with distances up to 20 feet apart in B-47 jigs and master gauges. It improves accuracy, reduces the setup time on tools requiring all three operations by as much as 30 per cent, and its price is less than half of the total price of all three machines if bought separately.

Another little gadget at Wichita is a Birdsboro hydraulic press of 5,000-ton capacity which has twice the capacity of the largest hydro press used to make B-29 parts during the past war. It is especially designed for such heavy parts as bulkheads and other circular components. This press weighs 326 tons and costs $242,008.29 installed, incidentally.

Workers and machines are revolutionized in this new kind of production. Mechanics can no longer think of one-thirty-second and one-sixteenth-inch tolerances. The talk today is of thousandths of an inch, and micro-finishes.

END

CIVIL AIR PATROL

WING TALK

Radio Notes

MEMO TO COMMUNICATIONS OFFICERS: Do you know if the mobile power supply for your radio communications equipment will work when you need it? And have you tested that transmitter stored in your supply warehouse?

Radio facilities of the Civil Air Patrol are going to be important in each state and area civil defense plan. Maj. Arthur D. Rhodes, CAP communications chief, urges all units to check their equipment now and see that everything is in proper working order.

At the Wing Commanders' conference in Washington late in October, Major Rhodes called for a concerted drive to increase the number of CAP radio stations from 7,000 to 10,000. At the same time he announced that the Air Force had authorized, subject to FCC concurrence, use of 4450 kcs for CAP state nets to supplement the overworked 2374 kc channel. He also indicated that the CAP may soon be given two additional frequencies—one at 2394 kcs and the other somewhere between 2900 and 3200 kcs.

In the program to change over intra-Wing nets to VHF, Major Rhodes stated, national headquarters has obtained enough crystals and tubes for "522" sets to fill any reasonable quantity that Wings may require. Now that voice transmission is authorized on regional nets, he urges all Wings to give personnel as much experience as possible in voice transmission.

Major Rhodes emphasized that everything that can be done to prepare personnel and equipment for emergency service—whether in civil defense, air rescue or local exigency—should be accomplished as soon as possible.

Air Force Scotches Rumor

ONE FURTHER POINT on communications. Rumors have been circulating around the country that radio stations would be ordered off the air in the event of an air attack. The Air Force states that this is not true. Further, operation of CAP radio nets will not be curtailed, since the traffic they would carry under such circumstances would be of top priority either to the Air Force or to the civil defense organization.

To Meet in Puerto Rico

CAP'S EXECUTIVE BOARD accepted an invitation from the Governor of Puerto Rico to hold its January meeting in San Juan, according to an announcement by Gen. Carl A. Spaatz, board chairman. The board last met in October at Jackson, Wyo.

Get Your Camera Ready

BIG PHOTO CONTEST plans are being worked out by CAP national headquarters. The contest will be sponsored by FLYING. So get those cameras ready and watch FLYING next month for further details.

CAP Program Enrolls 8,000

CAP'S AVIATION EDUCATION program went into its second year this fall with more than 8,000 students and 345 schools participating. Some 3,400 students in 121 schools took the course last year. Schools interested in offering the CAP-sponsored course of aviation instruction should contact the Civil Air Patrol Wing commander in their state or write direct to the Commanding General, CAP National Headquarters, Bolling Air Force Base, Washington, 25, D. C.

Radio Mission

OPERATION CHECKPOINT, a statewide communications maneuver by the Michigan Wing, staged in conjunction with the famed annual Jack Pine 500-mile cross country motorcycle race on Labor Day weekend, provided invaluable experience for Wing communications personnel in setting up and operating a radio network under emergency conditions.

Mission of the CAP radiomen was to send wireless reports on the progress of the more than 350 motorcycles—racing to Jack Pine headquarters near Lansing—from checkpoints along the 500-mile route between Lansing and West Branch. More than 50 checkpoint and relay stations were set up, and some 27,500 messages were transmitted between 1100 on September 3 and 2000 on September 4.

Although most operators went into the field without having a predetermined location for their stations, every team set up its emergency-type equipment and went on the air without a hitch. Stations were operated from deserted farmhouses, log cabins, tents and automobiles. Antennas were mounted in trees, on windmills, and fire towers.

Radio station set up in a cabin near Ithaca, N. Y., by Cadets Rodney G. Kimball (left) and James D. Williamson.

All stations carried stand-by equipment in case of breakdowns, and gasoline-driven generators were used wherever commercial power was not available. (When a commercial power plant at Ithaca broke down, CAP's units provided emergency power for the entire resort community, in addition to running the radio relay station).

Nearly 150 CAP personnel participated in the maneuver, many of them spending the entire two days in the field, camping out and cooking their own food. Project Officer for the maneuver was Lieut. C. A. Armitage, CO of the Lansing Squadron, who planned the entire operation in cooperation with the Michigan State Department of Conservation and the Lansing Motorcycle Club.

Fire Fighter

WING TALK this month congratulates 1st Lieut. Charles R. Tarr, Commanding Officer of Maine Wing's Bridgton Flight. While on a routine flight recently, this alert CAP flight commander spotted a fire in a neighborhood forest. Returning to his base, he directed a ground fire-fighting team to the scene of the mounting blaze. What might have become a disastrous forest fire was quickly extinguished with little loss.

Nonagenarian Joins CAP

SIXTY YEARS AGO, doctors told Charles Kinney that his malaria was incurable and he was not long for this world. So "Doc" Kinney left his native Missouri and went to Arizona to die. He wishes those doctors could see him today, if they're still alive.

Now 90 years young and hardy as a yearling, Doc lives alone in the little cabin he built on his mining claim in the Buckhorns, 20 miles east of Wickenburg. He doesn't have a television set, a telephone, or even a radio, but he says he gets along fine without modern conveniences. After all, the dry, warm Arizona climate doesn't demand too much shelter or a fancy heating system. There's a wonderful spring close at hand to provide cool, clear mountain water and a cave near the cabin makes a first-class refrigerator.

What's this all got to do with Wing Talk? Well, Doc knows the Buckhorns like a book and he's joined CAP, figuring his knowledge of the terrain might be put to good use in the event of a crash in that area. Doc's now a Private in Wickenburg's Flying E Squadron, assigned to patrol duty in the Buckhorn area.

CAP folks in Arizona are mighty proud of Doc Kinney, oldest member of the Civil Air Patrol. We think he's quite a guy, too.

Staff Appointments

THE FOLLOWING new Wing staff appointments have been made by National Headquarters: Lieut. Col. W. T. Gilbert, Deputy CO, Connecticut Wing; Lieut. Col. Harry J. Standring, Jr., Deputy CO, Massachusetts Wing; Lieut. Col. Hanson E. Sanders, Deputy CO, Mississippi Wing; Lieut. Col. Joseph I. Chitwood, Acting CO, Montana Wing; Lieut. Col. Donald D. Webster, CO, National Capital Wing; Lieut. Col. Herbert V. Scanlan, CO, New Mexico Wing; Lieut. Col. Julius M. Hetland, Acting CO, North Dakota Wing; Lieut. Col. Willoughby G. Dye, Deputy CO, Oregon Wing; Lieut. Col. F. E. Elliott, Acting CO, South Dakota Wing; and Lieut. Col. Harry A. Seavey, CO, Vermont Wing.

WHEN A PILOT NEEDS A FRIEND . . .

"When a pilot needs a friend, and all pilots certainly do, AOPA has always been ready, willing and able. During the past four years that I have been an AOPA member I have seen your organization protect, represent and help us. AOPA makes civil flying safer, less expensive and better. It's a must."

Leonard M. Green, 32378

Service . . . continuous service to its members . . . is the first rule of AOPA. Ask any of the 50,000 private flyers who have joined the largest of all private flying organizations and they will tell you that AOPA gives them more safety . . . more fun . . . more flying for their money . . . and more all round service than they can get anywhere else. Listed below next to your membership blank are a few of the time-saving, money-saving features and advantages that are yours for the unbelievably low membership fee of $5.00 per year. Join today . . . and know that whenever and wherever you need help, AOPA is standing by.

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The Washington staff of AOPA will help you in personal flying problems, licenses, regulations, legal tangles, documents, plane sales and purchases. Also national AOPA-Hertz Driv-Ur-Self courtesy card; AOPA Washington Newsletter; each month the special AOPA edition of FLYING magazine; TWA-AOPA courtesy card assuring service and maintenance facilities at most TWA airports, advantageous aviation insurance service; distinctive AOPA pilot's wings, emblems for your plane and car, and membership card. Above all else, AOPA continuously protects and fights for your flying interests in government and other circles.

AIRCRAFT OWNERS AND PILOTS ASSOCIATION
National Headquarters, Dept. F-151
Washington Bldg., 15th and N.Y. Avenue, N.W.
Washington 5, D. C.

I first soloed an airplane at.....in the year.....

I own aircraft NC.....Make.....
I hereby apply for membership in AOPA

I was previously an AOPA member.....

My registration number was.....

Enclosed find check or money order for.....
(U. S. A., Canada, Mexico, Central & South America, $5.00. All other Foreign, $6.00.)

NAME.....
Please Print

ADDRESS.....

CITY & STATE.....

PILOT LICENSE NUMBER.....

SIGNATURE.....

$1.80 of each year's dues are for my subscription to the AOPA Edition of FLYING.

"AOPA"
AIRCRAFT OWNERS AND PILOTS ASSOCIATION

LOGGING TIME

WITH HY SHERIDAN

Captain, American Airlines

THE HUMAN RACE

It has often been said that when we improve the education of the world's peoples we will have conquered our major afflictions such as crime and poverty and war. This is a vain hope. Education is not the answer.

We have taught most people that the slot machine is a purely mechanical device with no element of chance in it, and the customer is sure to lose his money. Yet people play the slot machines.

Our problem is intelligence, not education. Unfortunately, intelligence cannot be taught.

* * *

DEFINITION

Landing light. That which is more admired than landing heavy.

* * *

KNOTS

Brace yourself, lads. On July 1, the beginning of the friskal year 1952, the CAA will officially adopt nautical miles instead of the tired old mile with only 5,280 feet in it. We heard that in England the nautical mile had 800 more feet and so we had to do something about it because we couldn't let people who keep dukes and earls and things like that be ahead of us, so the American nautical mile is 800.20 feet longer than the statute mile, or 6,080.20 feet.

Some of us old timers are going to have a hard time changing over. Me, I'm what you would call a hold-out. As a matter of fact, I'm now working on a telegram to be sent to the CAA on June 30, 1952, and it will read something like this, "Miles an hour to me. Knots to you."

* * *

STRIKE

The airlines of the country may be shut down for a while. The main reason is that Mr. Smith, who holds down the chair of American Airlines, does not like Mr. Dave Behncke, president of the Air Line Pilots Association. Mr. Smith won't have any truck with Mr. Behncke's men, the pilots, who, much to his distaste, are his men also, creating a kind of double life which is burning the pilots at both ends.

The dear old public, as usual, sits between the two fires. Mr. Smith fires at Mr. Behncke and Mr. Behncke fires at Mr. Smith and Mr. Smith fires the pilots—or will if he wins the strike.

For American Airlines pilots have voted to strike, and the rumor is that the employees of the other lines will not cross the picket posts. This will nearly shut down air travel in this country.

The complaint of the pilots is that General Smith will not allow his lieutenants and top sergeants to hear any grievances—and that the pilots' real pay has been going down for 11 years. That is the biggest grievance; nothing can grieve like a pocketbook. As the airliners go higher the pilots get lower.

Mr. Smith contends that the company is taking care of the pilots very well indeed, if not in a monetary sense, in an environmental sense. The company furnishes two stewardesses where it only furnished one before.

So when the strike starts, since it will tie up the air mail as well as the air passengers, the President will step in and appoint a fact finding board and they will work hard for some weeks, not that the job would be so difficult for ordinary citizens, but for Government men it is a tough assignment because of their lack of familiarity—in Washington, as we all know, it is a very unusual thing to run into a fact.

And if you like irony, remember that General Smith is Mr. Truman's Boss of Transportation for the present emergency which includes the Korean emergency and shows robust signs of being permanent.

* * *

HARRYING THE TAX-PAYER

As Mr. Truman climbs aboard his big plane, the *Independence*, possibly the only independence left in the country, his cronies have an appropriate farewell for him. "Happy lendings," they call out.

* * *

THAT GAL SADIE

"We have found," declaimed a passenger on the DC-6, a gentleman who is a psychologist at one of our bigger universities, "that the surest indication of high intelligence is a big vocabulary."

"Well," said Sadie, "I think that it would be even more so if you knew what the words meant."

* * *

THE LAND OF THE FEE

On account of the Korean conflict, the Government asked for doctors to volunteer. One did, only one, and the tale is that he is a psychiatrist and he wanted to get as far away from Washington as he could. No sport in Washington.

* * *

DEFINITION

Americanism. An attitude which consists of denouncing special privilege and then trying to get some.

* * *

EPITAPH

Within this silent plot
Lies the body of Willie O'Toole;
As a pilot he was hot
And we put him here to cool.

Meyers "145"

(*Continued from page* 34)

we were airborne did I notice that we had taken off quite nicely with 1,900 r.p.m. instead of the normal 2,200 for take-off. I was quite embarrassed, but Al laughed. The days of the push-pull billiard ball throttle knob must be about over, for this one had a screw mechanism on it that literally screwed the power on and off.

The landing gear came up in exactly five seconds. The airplane seemed to settle for a second, then leaped ahead as the gear faired in with the belly and the flaps came up into retracted position. I checked the airspeed at 90 m.p.h., tachometer at 2,300 r.p.m., 25 inches of manifold pressure, and rate of climb at 1,200 f.p.m. Less than two minutes after take-off we were flying through wool packs of cumulus clouds. Another minute and we were circling above them.

In level flight at 2,350 r.p.m., 19 inches hg, 3,000 feet above Indiana, we indicated a true 145 m.p.h. Cylinder head temperature stayed constant at 180°. There was no appreciable noise at cruising speeds. Ventilation was just right up there.

MEYERS MODEL "145"
Continental C145-2 engine
(Type Certificate 3A1)

Wing span	30 ft.
Length	21 ft. 4 in.
Height	6 ft.
Empty weight	1,225 lbs.
Gross weight	1,910 lbs.
Wing area	154 sq. ft.
Top speed (sea level)	166 m.p.h.
Cruising speed	145–155 m.p.h.
Stalling speed	42 m.p.h.
Rate of climb	960 f.p.m.
Take-off run (five-m.p.h. wind)	615 ft.
Landing run (five-m.p.h. wind)	375 ft.
Wing loading	12.40 lbs.
Range	600 miles
Fuel capacity	30 gals.
Service ceiling	18,000 ft.
Baggage (full gas and two passengers)	50 lbs.
Price (with standard equipment)	$5,995.00

Source: Meyers Aircraft Co., Tecumseh, Mich.

Turns and banks were fast. A touch of wheel, a breath of rudder, and we were around the corner heading back. Turns were executed correctly without even touching the rudder. By screwing the elevator trim tab control right and left I made several 360° turns without touching other controls. She leveled up without any rudder. Placing the airplane in a medium bank to the right, I rolled the wheel quickly to the left without any coordinating rudder. It slipped for a moment, then settled into the new arc.

The stall series was next. In clean condition (flaps and gear up, and cowl flaps closed), it took considerable time to slow down from 145 to 70 m.p.h. As the nose climbed slowly above the horizon line, Al took over and demonstrated without any rudder application.

Slowly he inched the wheel back while assuring me that she would not spin. The engine was barely audible at 550 r.p.m. At 60 m.p.h. she still had control.

"Watch for the buffet," Al said, as he

moved the wheel back. As the indicator slowed to 55 m.p.h., there was a short buffet. At 50 she broke clean and true without Al's feet on the rudders. The buffet that always occurs at five m.p.h. above the stalling speed serves as an excellent stall warning.

"When the CAA inspector flight-checked this airplane," Al continued, "he tried his best to spin it in clean condition, but couldn't."

"Will it spin under any conditions?" I asked.

"Yes," Al said, "with gear and flaps down. Davidson did put it through three turns, and recovered in one-fourth turn."

We then worked into stalls with flap and gear down. Still Al would not put his feet on the rudders. As we approached 50 m.p.h. this time, he started rolling the ailerons back and forth.

"Relax, Ed," he said, "I'm not going to do anything dangerous."

He continued to rock the wings up and down, airspeed indicating 50 m.p.h. At 45 she stalled, then leveled off, still no feet on the rudders. Repeated stalls at different angles and speeds served only to prove further the stability of the aircraft.

Coming in for a landing, the gear dropped and locked in one and one-half seconds. The windows, through which you can see the position of the landing gear at all times, are a feature that might be copied by other designers in the interests of safety. The buzzer system on the gear warns when the throttle is closed, or screwed, below 1,800 r.p.m. We glided in at 80 m.p.h., pulled two notches of flaps, and flared out on the runway. The stall again occurred at 45 indicated. Correct gliding speed is 65 to 70 with flaps and gear down.

After a quick cigarette, Robert J. (Bob) Ferguson from Lincoln, Nebr., took over as my co-pilot in shooting some landings. The paved runway at Bloomington is 850 feet above sea-level. The take-offs were made to the northeast, with a four m.p.h. wind from the north. The temperature was 85° and barometric pressure 30.06. Under these conditions, without "horsing" the plane off the ground, we measured 760 feet the first take-off, and 712 feet on the second try under full-load conditions. Landing runs were taped at 693 feet. The brakes were not too well adjusted; the airplane actually can be stopped in a much shorter distance. (In the CAA test the take-off was made in 615 feet, and the landing run was measured at 340 feet.)

On one landing I was coming along fine, except that the nose didn't come up to "flare out." We thudded into the runway with plenty of flying speed. I thought Al was holding the wheel down, and he thought I was holding it. After a poor landing (the Meyers' gear certainly got a work-out), we decided that I had excess nose-down trim and wasn't pulling the wheel back enough.

The Meyers 145 looks like an ordinary post-war airframe that has been stretched and lengthened, giving it a long, symmetrical profile. The canopy "bubble" fairs into the fuselage but gives the pilot 360° visibility. An extra-long nacelle houses the six-cylinder, opposed 145-h.p. Continental, with more than enough room for a 185. The aircraft is stressed for a 185 engine if and when the market warrants it. The wings are tapered in leading and trailing edges to squarish tips, somewhat like the F-51. The tail-group has been squared up and faired quite like the North American T-6. A shell-type spinner completes the comeliness of this airplane. One may have a choice of propellers—Lewis wood, McCauley forged aluminum, or Hartzell ground adjustable.

Gross weight of the airplane is 1,910 pounds; empty it is 1,225 pounds. Useful load is calculated at 685 pounds. Fully loaded with two people, 50 pounds baggage, and 30 gallons of fuel, the airplane is guaranteed to cruise at 145 to 155 m.p.h.

Long-range tanks, 24 gallons in each wing—which may be purchased as extra equipment—give six and one-half hours of non-stop cross-country flying, or a range of 1,000 miles. The spacious baggage compartment will hold two gladstone bags and a brief case.

Standard equipment includes a Meyers-designed hydraulic landing gear, flaps, standard flight and engine instruments, running and panel lights, and General Electric Model AK40 radio. Mitchell VHF Avigator, complete with whip, short cable antenna and marker beacon receiver is obtainable if desired.

Interior upholstering can match any colors of the purchaser's automobile. The aircraft I inspected at the factory was upholstered with pure wool Chrysler "Windsor" green. A "morat" deep green synthetic enamel blended with a gray-green instrument panel. Even the front deck is upholstered in color as desired, just so it is dark enough to eliminate glare. Interior side panels are a checkerboard of Sealtuft, Saran plastic, both washable and decorative. A secret switch is located in the cabin to prevent uninvited guests from starting the engine. Only an ashtray and adequate ground ventilation are needed to make a passenger feel he is in a custom automobile.

The Meyers 145 sells for $5,995 FAF. Gyro instruments and long-range tanks are extras. Al Meyers has been tooled up for some time to build the airplane by production-line methods. Since the certification in 1948, he has built quite a few in batches of 10.

Summing up my impressions of the Meyers 145, I believe it's one of the finest performers in its class. It is easy to fly and as an executive's or salesman's small airplane it is hard to beat. Its economical cruise (about 19 miles per gallon) should place it in a class by itself. Fifty gallon long-range tanks will carry the airplane from the Midwest to California with one stop. Sportsmen should be keen on its unusual ruggedness and lack of acrobatic placards. Its stability at those "careless" speeds should recommend it to the more timid.

There were a few items on the plane I flew that have since been taken care of. The instrument decal system was confusing and the various instruments and gadgets were not carefully labelled.

On hot days milady may lose her make-up as the cabin is not adequately ventilated on the ground. This airplane also had that high lift feature for dresses, while mounting the wing. A passenger step has since been added.

With the exceptions I have noted, I will say that this is a beautiful airplane. It seems that Al Meyers has had a dream come true. END

15 YEARS AGO

FROM the January, 1936, issue of this magazine:

The Vultee Attack-Bomber (top speed 245 m.p.h., cruising speed 220 m.p.h.) had "remarkable performance for a

military type aircraft." Powered by a 750-h.p. Wright *Cyclone*, the attack plane could climb to 20,000 feet in 14 minutes. Service ceiling was 27,000 feet.

Sign of the times: Plans and a complete description were given for home-built hangar which could be constructed for "less than $100."

Popular executive plane, the Fairchild "45" provided "the comfort and general arrangement of a first-class five-pas-

senger automobile." The "45" was powered by a 225-h.p. Jacobs air-cooled engine, had a top speed of 160 m.p.h. and a cruising speed of 147 m.p.h. Range was 600 miles.

Wright Field physiologists "hope to find a way of constructing open cockpits so that drafts from the floor or sides can be eliminated."

New Czech lightplane, the Praga E.114 *Air Baby* was a side-by-side two-seater built completely of wood with a ply-

wood covering. Powered by a 40-h.p. Praga "B" engine, the *Air Baby's* top speed was 93 m.p.h. and cruising speed, 79 m.p.h. It had a service ceiling of 10,000 feet and a range of 318 miles.

TWENTY YEARS AGO

An unofficial speed record of 360 m.p.h. was set by an RAF pilot, A. H. Orlebar, while flying a Gloucester-Napier seaplane.

Bill Renshaw
State Fairgrounds
Indianapolis 5, Ind.

VIA AIR MAIL

Flying Farmers, U.S.A.

PROTECT CIVILIAN STATUS

Should the CAA be militarized? To get the reaction of Flying Farmers to this far-reaching proposal, this column recently conducted a straw vote among state and national FF leaders.

Our first question was, "Do you favor militarization of CAA if war conditions do not become any worse than they are now?" Of the 28 replies received from all sections of the nation, 27 answered with an emphatic "No!" The 28th, Mrs. Jessie G. Barnum, FF secretary in New York, said she wanted to consult with some of their members before answering. Incidentally, our poll was taken when things looked darkest in Korea.

Our second question: "If you do not favor militarization of CAA at present, under what circumstances would you be in favor of such action?" To this, 10 FF officers said they would be opposed to militarization of CAA under any and all circumstances. Two failed to answer this question, with the remaining 15 willing to have the Air Force take over the CAA, "only under very hot water," to use the words of J. H. Sossaman, president of Arizona FF's.

Others like Forrest Hedgecock, president of New Mexico FF's, felt that such action would be justified only if the continental United States was under attack. Several, like Mrs. Dorothy S. Woodward, secretary of FF in South Dakota, would be willing to see CAA employees put on a uniform "only when every other civilian line of endeavor must be militarized."

FF officers opposed to CAA militarization under any and all circumstances offered vigorous arguments against such legislation. Said Palmer Torvend, FF secretary in Oregon, "There is no more reason for militarization of CAA than there would be to militarize employees of the Department of Agriculture."

A half dozen others, like Ralph Young of Ohio, answered with a cryptic "never." Four others, like L. H. Smith of Alabama, made their reply a terse, "under no circumstances."

This column agrees with Flying Farmers that militarization of CAA is about the last thing this country needs. We believe that the measure to put CAA officials into Air Force uniforms runs contrary to American traditions and the basic objectives for which we went to war in Korea. We do not believe that public employees should be put into uniform.

Sponsors of this legislation, which has been hush-hush to the point that it was once marked, "Administrative Restricted," argue that it is very necessary.

They say that unless it is enacted, CAA's key personnel in reserve status might be drafted or called to active duty—nothing could be farther from the truth. Proponents of the legislation must know that an executive order from the President freezing these people in their jobs is all that is necessary.

Under the present set-up CAA has to be reasonably certain that they are right before they make any drastic moves. With a branch of the military in control, the CAA could conceivably do as it pleased under the guise of "military necessity."

This column believes that CAA should be kept civilian and civil always—with one possible exception: Should this country ever become a theater of enemy air operation, such action might be justified. In that event, every precaution should be taken to assure the return of CAA to civilian status once the emergency has passed.

* * *

EYE-CATCHER

More than 80,000 persons saw the aviation exhibit at the recent Indiana State Fair. An eye-catching map of

the state (above) showed the location of more than 1,000 Flying Farmers. According to Kenyon Wyckoff (right), president of the midwestern FF's, the map was "our best propaganda."

* * *

TAXES MAKE JOBS

On the subject of an aviation gas tax mentioned in this column recently, Forrest Hedgecock, FF president in New Mexico, writes: "For my state, I believe, Attorney Straley Thorpe is right. I think it would only create a few more jobs for politicians." Thorpe, it should be recalled, is opposing enactment of such a tax in Indiana.

* * *

ARE BOARDS WORTH WHILE?

Do state aeronautical commissions or boards have a real function? And if so are they doing the job? To get the answer, this column is again going to Flying Farmers scattered throughout the nation. We'll give you their reaction in the next issue of FLYING.

Behind Iron Curtain

(*Continued from page 24*)

span. The type appears to be one of the best of the current crop of Soviet jet combat airplanes and is a worthy compatriot for the new Mikoyan-Gurevich and the Lavochkin swept-wing interceptors now entering service.

The Tu-10 is comparable in size to Britain's English Electric *Canberra*, and is powered by two axial-flow turbojets derived from the early *Jumo* M-003 and M-004 units housed in long, square-shaped, underslung nacelles. Each engine is reported to develop upwards of 4,000 pounds of thrust.

The Tu-10 is a three-four seater with a clean, oval-section fuselage about 60 feet long, square-cut wing and tail surfaces, and a tricycle landing gear. The main wheels retract rearwards and upwards to lie flat under the engines and account for the "bulged" nacelles. The nosewheel also retracts backwards and is housed in an offset bulge behind the bombardier's compartment. The pilot sits under a semi-teardrop style canopy that gives him good visibility.

The Reds do not expect the Tu-10 to show its heels to the latest U. S. fighters. This is shown by the provision for a tail gunner equipped with a free-mounted 20-mm. Sh-VAK cannon. Other armament is believed to include two 20-mm. guns in the wing leading edge. A useful-looking bomb bay in the fuselage may carry a bombload in excess of 5,000 pounds.

Of all-metal construction, the Tu-10 appears to be a thoroughly workmanlike aircraft in the best Soviet tradition. It is a strictly orthodox job, cleanly tailored along typical Tupolev family lines and falls within the short-range tactical category. With a normal all-up weight of about 30,000 pounds and assuming 8,000 pounds static thrust, the Tu-10 should have no difficulty clocking 535 m.p.h. at sea level and maintaining it all the way up to the tropopause. There the corresponding Mach number of 0.80 looks like a conservative limit. The plane's range is probably around 2,000 miles and its cruising speed is upwards of 450 m.p.h.

Although major Soviet efforts are concentrated on new swept-surface turbojet and rocket-propelled fighters capable of transsonic speeds, much attention is also given to progressive development of types that have been standard with Soviet fighter groups. These planes are undoubtedly destined for satellite air forces as soon as sufficient up-to-date airplanes are available as replacements.

Col. Gen. Alexander S. Yakovlev's diminutive Yak-15 [August 1950 FLYING] has come in for some of this face-lifting and a new, hotted-up variant is now leaving the assembly lines. Owing to doubt about the correct designation of this aircraft, we will refer to it as the Yak-15B.

Originally a marriage of convenience, or less politely, a lashup between the Junkers *Jumo* 004 (M-004) turbojet and the well-tried Yak-9 airframe, the Yak-15 is one of the smallest and most compact jet interceptors in the world. Its construction

is exceptionally light and simple and its speed range is reasonably good at 560-570 m.p.h. But the original Yak-15 suffered from an all-time low in pilot visibility for take-off because it retained the Yak-9's tailwheel undercarriage, an expedient intended to place the first Russian jet in production in the shortest possible time.

With more powerful M-004 units, Yakovlev has improved the basic design by installing a modern tricycle landing gear and a new square-cut fin and rudder, apparently to improve control. The nosewheel retracts into a "bulge" housing under the nose. Visibility, accordingly, is much improved.

Armament of the Yak-15B, same as that on the earlier production version, consists of one 20-mm. or 23-mm. cannon and two 12.7-mm. Beresin machine guns in the fuselage nose. Although the plane isn't as fast-climbing as later Red jets, its particular virtues are those which stem from low wing loading and moderate thrust. Maneuverability and stability, especially at altitude, are supposed to be of high order. In speed and climb the Yak-15B probably compares well with earlier British and U. S. jet fighters, no doubt having the edge in maneuverability.

There is no doubt that the Yak-15B will be replaced on the production lines by the MiG-15, a swept-wing jet fighter which has been identified in action in Korea and which has been fighting U. S. planes there. This production airplane has appeared in numbers and is a product of the famous designing team of Artem I. Mikoyan and Mikhail I. Gurevich. This fighter is now in service in some numbers.

Its armament includes at least one 30-mm. cannon in addition to 20-mm. guns. The MiG-15 has a performance only slightly inferior to the latest U. S. fighters, with an airframe that appears capable of high Mach numbers. A limiting factor at present is the thrust of its centrifugal compressor-type turbojet.

It seems incongruous that comparable British and U. S. planes are armed with the 20-mm. and .50-caliber guns used a decade ago while the Russians are installing 30-mm. and 40-mm. guns in their latest combat airplanes.

Five years ago, ex-*Luftwaffe* experts were amazed that new fighters were still being fitted with antiquated weapons. They pointed out that the *Luftwaffe* was using modern 30-mm. guns as long ago as 1944. The new MiG-15 fighter and the even newer Lavochkin LA-17 show that the Russians have learned from German experience—which should serve as a warning to our own air-weapon specialists.

Not only are the Reds improving their fighting aircraft but they are also adapting their pilots to the new developments. This is forcibly brought out in recent information about the UYak-15 jet trainer, also an adaptation from the Yak-15. It is possibly called the UYak because the "U" prefix means that the plane is a *Uchebny* (instructional) type.

The idea that the average Russian pilot is inferior to his western contemporaries was quickly proved a fallacy during the Eastern Front campaigns. Any Soviet shortcomings in combat resulted from lack of up-to-date equipment and flying instructors rather than lack of enthusiasm or organizational ability. Most Russian pilots received most of their post-basic flying in the hard school of war itself. Today, the Soviets know that to achieve qualitative parity with the USAF, they must have jet trainers in their schools.

The UYak-15 jet trainer follows western trends in being a two-seat development of a single-seat fighter—intended for high-speed handling, combat and jet conversion training. After graduation from the basic flying schools, about half the pilots in the Soviet Air Force are sent to fighter specialist schools such as those established during the war at Grozny, Kirovobad and Dyagilivo. There they spend some six months flying fast piston-engined trainers like the Yak-7 before graduating to the new trainer.

Thus the young Soviet fighter pilot becomes gradually indoctrinated to modern jet fighters. He is then posted to a fighter squadron to handle the new 600 m.p.h.-plus jet fighters with which most Soviet squadrons will be equipped within the next 12 months.

The new trainer is powered by a single M-004 axial-flow turbojet slung under the forward fuselage and exhausting below the wing trailing edge. The student and instructor sit in tandem under a greenhouse type canopy with sliding sections above each seat. The student sits well forward over the wing leading edge with an excellent field of view that is further enhanced on the ground by the tricycle gear modifications. A large tail bumper is a safeguard against damage from tail-down landings.

The cockpits have duplicated controls and standard instruments, and a camera gun and a gyro gunsight are probably installed. The armament, similar to that of the Yak-15B, consists of one 20-mm. Sh-Vak cannon and two 12.7-mm. Beresin machine guns mounted in the nose. The trainer spans some 33 feet and is 30 feet long.

Comparisons of training standards between air forces are often misleading. But if they must be tested in the future, we can be reasonably sure that Soviet training methods, with up-to-date equipment, closely approximate those of the United States Air Forces. END

★ FLYING TIP ★

AFTER LANDING at a strange field during a cross-country, many pilots find it difficult to orient themselves when taking off for the next leg of their flight.

I find it saves time, nerves and effort to select a check point for the next leg of my flight *before* landing. This is especially helpful when my direction for take-off is changed.

Railroad tracks, a tower, lake or highway noted before landing enables the pilot to resume his flight on course —without wasting time and gas circling around to get his bearings.

—*Marie Hubert*

THE WEEMS LINE includes many navigation aids and instruments which are standard equipment with U. S. Air Forces, major air lines and foreign governments. Many are navigation "musts" for pilot and student alike, especially the Weems Mark II Aircraft Plotter, the Dalton E-6B, or Mark VII Computer. A few of them are described below. Many others are available.

WEEMS MARK II PLOTTER: Scale fits sectional and world air charts. Used for plotting bearings, courses, measuring distances, constructing wind diagrams and angles. Only $2.00.

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CROSS-COUNTRY COMPUTER: The well-known Mark VIII Computer with addition of flight log and securing straps. Solves all speed-time-distance problems. Only $4.00.

IMPORTANT NEW BOOKS: *Flying The Omnirange* by Zweng. Tells how to fly cross-country by means of new Omnirange facilities. $4.00.

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BETTY SKELTON'S NOTEBOOK

A CORKER

Most fun I've had recently was the official "uncorking" of a 60-gallon bottle displayed high above the buildings of downtown Tampa, Fla. In a 30-m.p.h. wind, KYLE VICK, pilot for American Industrial Sales Corp., of Sebring, Fla., hovered his Hiller 360 helicopter so close to the huge neck of the bottle it was a simple matter for me to lift the six foot cork right out! Several thousand people packed the streets to see the unusual demonstration, causing one of Tampa's worst traffic jams. Giant letters printed on the cork spelled out, "FIRST BUY WAR BONDS." Closest call of the entire flight was when we passed the downtown buildings—my dentist stuck his head out of his office window and was so close he could have grabbed me. Just my luck, when I had been avoiding his office for three years!

JET-POWERED MIDGETS?

The Professional Race Pilot's Association of Torrance, Calif., under the direction and management of nationally-known race pilot BOB DOWNEY of Whittier, Calif., now is considering setting up tentative specifications for a new type midget race. The new racers would be about the same size as the present 190-cu. in. class and probably have to meet many of the same requirements. The main difference is that they will be powered with *baby jet engines!* It is believed that such an airplane—racing on a three to five mile course at speeds approaching 300 m.p.h.—would create terrific interest in lightplane racing as well as possibly breaking the ice for jets on civil lightplanes.

NEW RACER

GARLAND PACK of Nashville, Tenn., is coming out with a new little midget racer. He is one of the first to take advantage of the 1951 change in race rules for midget aircraft which does away with the minimum weight rule of 500 pounds. His flashy midget job will weigh only 460 pounds.

PORTABLE CARRIER

Navy recruiter Lieut. Comdr. RICHARD E. SCHRAM, flying a *Cub* trainer, demonstrates regular Navy-type carrier landings on the *U. S. S. Plymouth*—"the world's smallest aircraft carrier." The "carrier" actually is a flight deck atop a moving truck. Dick, who is affiliated with the CAA at Chicago's Orchard Airport during week days, is commanding officer of the Naval Air Reserve at Glenview Navy Base on weekends. He has also successfully demonstrated his own idea of stopping a *Cub* within just a few feet after the wheels touch the ground by dropping out a small 12-foot chute. The chute is packed in a convenient 1½ pound packet that easily fits inside the cockpit and opens by a static line to the tail spring when thrown out of the plane. As the chute opens, the *Cub* stops almost instantly. Dick says there isn't much of a jolt, but to me it looked just as though the mighty little *Cub* hit a brick wall!

SEEN IN PASSING . . .

The gang at University of Virginia Airport in Charlottesville, Va., have quite a system for measuring the surface wind velocity. Attractive glass Japanese chimes hang in the operations office. With windows open, if the glass chimes begin to tinkle from the draft it's too windy for students to fly solo . . . Sign displayed in this same airport office reads, "Them pilots that can brag without lyin'—let 'em brag" . . .

Betty Skelton

Manager Talks Back

(*Continued from page 27*)

completely. They very obviously feel they are privileged to make their own. They come straight in on the approach—never bother to get in the pattern on the down-wind leg. They barrel in, screaming for service, then go racing out on the wrong side of the runway, never bother to get into line, and cut ahead of everyone else for take-off.

How can we feel happy about such boors? They are bad for themselves, for aviation, and certainly for operators' blood pressure.

I did get a last laugh at one of these super hot-shots one day. A guy flew in a brand new *Navion*, ordered it tied down in a stentorian voice, demanded we get him transportation, and taxied into town. A couple of hours later he came back with two friends he was anxious to impress.

He didn't bother to report to us—just went out on the field, loaded up his friends, didn't check gas or oil, and prepared to take off. He gunned his engine and lunged ahead—about three inches. He was a deflated and red-faced boy when he got out to untie his plane at all three points.

The other day a pilot flew in with a new Aeronca. He taxied to the hangar, loudly demanded that his plane be hangared, and left despite the arguments of the line boy that we had no hangar space. We didn't even know his name. We left one of our planes out to make room for his, but I was around to meet him when he showed up the next day, and I was prepared to tell him to take his valued business elsewhere. But he beat me to it by apologizing. Seemed he had been late for an appointment and had mistakenly landed on a nearby private strip only a few minutes before and been shooed off by the lordly owner. Naturally he was still upset when he had left his plane with us.

So we all have our problems—not just the cross-country pilot who feels strange on a new field.

It would be wonderful if we could give our customers the kind of service they get when they drive their car into a super gas station. But we can't at present. The gas station sells 100,000 gallons and up a month—the average small airport pumps only 4,000 to 5,000 gallons. The super station is located on a 100x100 foot lot. The airport manager has to maintain 40 to 100 acres.

I have landed at airports on weekdays when the manager was out earning an honest buck giving dual instruction while his wife held down the office for him. They didn't do enough business to afford a line boy except on Saturdays and Sundays.

Give the guy a break. He can only be in one place at a time. Maybe some day we'll all be in the super-service category. But for the present let's be thankful that the guy is able to keep going at all. If he weren't in love with aviation he'd be running that super service station instead. END

CAA Inspector

(*Continued from page 36*)

struction. He is also a skilled pilot. To most pilots, each agent is just a "CAA man," and the agents let it go at that.

The tower men at Rosecranz Field told Ireland about the pilot they had filed the report on.

"It was miserable weather, below VFR minimums," they said. "A scheduled airliner, on instruments, was making its final approach to the field, when, out of nowhere, we saw this little airplane. He hadn't called us by radio, but simply popped out of the weather, turning from base leg to final as the airliner made his approach.

"We sent the airliner up and around again, and the small plane came in and taxied over to a hangar. He had almost fouled up air traffic, and that's why we filed the report with your office."

Ireland made detailed notes, especially about weather conditions at the time of the incident. Then he invited the pilot to give his side of the story.

"I guess I was only thinking about my plane," the pilot said, shamefaced. "I put down in an open field when the weather got bad, and then I began to worry about the ice damaging my plane. I knew that a field with hangars wasn't far, so I hopped over, under the weather. It's true, as the tower men said, that I failed to call in. I was just thinking about getting protection for my airplane."

Back in the air again, Ireland thought about the pilot's carelessness. Obviously, his action was based on ignorance and wasn't a willful disregard of safety regulations. He finally decided to recommend an official letter of reprimand with a careful explanation of why the pilot should have made radio contact with the tower. The letter would become a permanent part of the pilot's file. Ireland felt that under the circumstances this would serve the interests of safety better than a request for suspension of the pilot's certificate.

But at the next stop we heard a different, and much more serious story. This concerned a professional pilot, with commercial, instrument and instructor ratings, who had flown a lot of multi-engine time in another part of the country.

He had borrowed his father's lightplane for a visit to another city. He didn't check the weather at his destination, where conditions were below his instrument minimums, although the information was available, and he didn't file a flight plan.

He took off with VFR conditions and climbed on top of a solid overcast. The tower at his destination first heard from him when he called from 6,000 feet, still on top, wanting to land.

An airliner and a private plane were about 30 minutes from the airport. The tower cleared the pilot to land, but when he descended into the overcast he got lost. The tower didn't know where he was and he didn't maintain radio contact.

Both approaching aircraft were held away from the field because this small, lost plane was fumbling around in the soup. The two planes circled and circled. Finally, as their gas minimums were reached, each of them by-passed the area and proceeded onward. Passengers wanted to land at the airport; others were waiting on the ground, but landings were not possible until the small plane was accounted for.

An hour and 40 minutes later, the small plane finally landed, with a 200 to 300 foot ceiling, one mile visibility, fog, drizzle and a 35° temperature on the ground.

"He was wrong," Ireland says. "He not only risked his life, but he jeopardized many other lives, caused two large aircraft much inconvenience and cost them a lot of money. As a professional pilot he should have known better. We can't overlook that sort of violation."

A violation report was filed that resulted in a suspension of the pilot's license for 30 days.

With that unpleasant incident checked off the list, the day's itinerary was reshuffled. Pat Baretta was interested in following up a number of maintenance problems in the district. At Independence, Mo., J. J. Villnave, operator of the maintenance shop at the airport, had designed an auxiliary fuel tank to be used on a *Cub*.

Baretta had recommended a change in the fuel line to eliminate a slight dip where moisture might collect. When he saw the revised arrangement, the dip had been eliminated. The tank is now being produced by Villnave for use by owners who want a longer cruising range.

Out on the field Baretta paused to look over a plane that was to be recovered. The owner had not agreed that the wings needed new fabric, so Baretta had made tension tests with equipment at the district office. The fabric of one wing tested nine pounds, the other 36. Correct minimum strength is 46 pounds. The owner had been willing to bet his life on wing fabric that was one-fifth as strong as it should have been. The CAA had not been willing to make the bet. Before he flew again, the wings would have new covering.

Enroute to Paola, Kan., Baretta told of another owner who was not afflicted with undue caution. He had installed an automobile-type air cooler beneath his cabin plane and thought the change was "too minor" for the CAA to bother with. Fortunately, Baretta saw the installation. The air scoop, directly behind the exhaust, would have forced carbon monoxide straight into the closed cabin.

"Most dangerous thing I ever saw," Baretta said. "It's lucky he never had a chance to fly it."

More than either Baretta or Ireland, Dave Detamore works directly with pilots. As an Aviation Safety Agent, Airman, he has ridden with thousands of applicants for pilot's certificates. He has a kindly feeling for students who hesitatingly take him aloft.

"No matter how sure of himself he is on the ground," he said, "almost every applicant is nervous when he takes us up for a check. I remember an older man

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who was head of a manufacturing firm, bossing hundreds of people. I asked him to repeat one or two maneuvers. I guess he thought he had flunked his test because he became quite downcast. When we landed and I told him that he had flown well and had passed with ease—he was the most delighted man I ever saw."

Detamore feels that older people, and those with moderate handicaps, often make the most dependable flyers.

"They're thinking about it," he said. "They work hard on their maneuvers. When they master the job, they've got it well under control." He told of a pilot with one leg who could operate both rudder pedals and the brakes.

"He was good, too," he said. "His foot shifted from pedal to pedal so fast you could hardly see it."

"Too many applicants," Detamore said, "fail to understand the importance of pre-flight examination of their airplane. We think safe flying begins with this inspection. The first thing we do is to ask the student to check his plane, and tell us what he is doing. If he sluffs it off, it makes us wonder if he'll do his flying the same way."

At Paola, the CAA men were interested in a late report on a project of Kenneth Larrimore's, the airport operator. He had bought and repaired a wrecked Aeronca for $600—installed spraying equipment for another $600—and sold $3,600 of spraying contracts in his first season. He used airplane rides as sales clinchers in many cases. From the air a farmer can see the good and bad portions of his land better than he can from the ground, and Larrimore, a big, friendly vet with 8,000 air hours, had made many a spray sale by showing farmers their property from this new perspective. This time the report was a good one, with more than $4,000 worth of business for the current season.

Soon the *Navion* was wound up again and headed for the gleaming white concrete runway of the airport at Ottawa, Kan. There R. C. Cannady, a flying farmer, was concerned about some battery acid he had spilled inside the cowling of his shining new *Swift*. Pat Baretta removed sections of cowling and peered and inspected for a few minutes.

"No damage," he said, as he replaced the cowling. "The soda you used to neutralize the acid did the job."

The pilot was relieved. "Thanks," he said.

"That's okay," Baretta said. "Glad to help, any time."

Reports had been received of a small Kansas airport where considerable "buzz-flying" took place, so the trip continued in that direction. After landing and watching for some time, the CAA men felt discouraged at what they saw.

One man was flying a war-surplus BT-13 that had not been certificated. When he landed, Ireland greeted him and asked to see his pilot's certificate. The pilot said that he had none. In fact, he said, he had taught himself how to fly by taxiing the plane across the pasture. Now he not only "flew" the airplane for himself, but he also took his girl for rides.

"Just think!" Ireland said. "An uncertificated, dilapidated, war-surplus airplane —carrying passengers—flown by a pilot without proper training. Whew!" He felt that more than a reprimand was needed in this case.

The self-trained pilot's career was ended when the CAA filed a report of the violation. The case was heard in Federal Court and the pilot was fined $250. A permanent injunction against his flying was also issued.

Another problem encountered was the case of the pilot who had been flying for about 20 years without a pilot's certificate. A CAA man had offered to help the old timer until he became proficient enough in required maneuvers to pass his tests. But the pilot wasn't interested. He'd been doing it this way for so many years —he wasn't ready to begin conforming to regulations.

Regretfully, the CAA had to proceed against him and he also was fined $250 in Federal Court.

Back at the Kansas City Municipal Airport, Ireland explained the duties of Safety Agents in his office. Of the five maintenance agents, four handle scheduled carrier matters. Baretta handles maintenance activities other than scheduled.

There are three Airmen Agents for certification of pilots, navigators, schools and similar operations, with Dave Detamore in charge. Four Flight Operations Agents work with scheduled carriers and one, George Ireland, works with non-scheduled carriers.

Airman Agents and Maintenance Agents cover their territories on strictly-planned schedules so that interested people can come to each airport on the proper day for tests or consultations. While flight tests are being given by one agent, the other gives ground tests.

Ireland has great praise for most of the non-scheduled operations. But occasionally there are headaches, like the DC-3 that was found to be overweight and without enough gas.

It had made three passes at the field, under instrument landing conditions, with 29 passengers aboard.

It made the trip with a flight plan with an alternate field that was farther away than the gas could have taken it. The rules say there must be at least 45 minutes of gas left when the alternate field is reached.

An error made in computing the load at take-off added to the already existing overload.

"I don't have much sympathy for a fellow who willfully jeopardizes 29 lives," Ireland says. At the time this article was written, this violation, and several others against the same company, was pending before the Civil Aeronautics Board.

CAA men cannot afford to take chances. Their one job is to carry out the provisions of the Civil Aeronautics Act of 1938 —to promote safety, and to help foster and develop aviation. Their actions in behalf of the girl with the "buzzing" boy friend, the airline passengers, the pilot with the new cooler and the one who thought he "didn't need" new wing-fabric were proof enough to me that Ireland and his fellow agents are on the job. END

★★★★★★★★★★★★★★★★★★★★

THE LIBRARY

THE THUNDERSTORM, by Horace R. Byers and Roscoe R. Braham, Jr.; Report of a joint project by the Air Force, Navy, National Advisory Committee for Aeronautics, the Weather Bureau and the University of Chicago. Published by the U. S. Government Printing Office, Washington 25, D. C. 287 pages. Price $2.25.

The complete report of a project that has aroused widespread interest in aviation circles since it was begun more than four years ago. (See Who's Afraid of Thunderstorms?" July, 1947, FLYING.) It is the most thorough study ever made of what the authors call "a cumulus cloud gone wild."

Flying at levels from 5,000 to 25,000 feet, five P-61 (Black Widow) pilots made a total of 1,363 flights through thunderstorms—without an accident—to gather data for the book. More than 179 thunderstorms were observed both in Florida and Ohio during 1946 and 1947.

Byers, director of the project and head of the department of meteorology at the University of Chicago, won the Robert M. Losey award of the Institute of Aeronautical Sciences in 1941 for his contributions to research on weather. His assistant, and senior analyst for the project, was Roscoe R. Braham, Jr., famed U. S. Weather Bureau expert.

FLYING THE OMNIRANGE, by Charles A. Zweng; published by Pan American Navigation Service, North Hollywood, Calif., and the Weems System of Navigation, Annapolis, Md. 1950. 101 pages, plus folding map. Illustrated. Price $4.00.

Written for the average pilot rather than the technician, this is a basic, practical text on the use of the new radio navigation facilities now being installed across the U.S. The extreme simplicity of flight with the aid of the omnirange stations, more than 400 of which will be in operation by January 1, is underscored throughout the book. There is a non-technical discussion of VHF radio waves, of how the omnirange receiver and transmitter function, and how omnirange is used to guide aircraft toward or away from a station by the indication of a "left-right" needle without regard whatever for wind drift. The book also contains 77 study questions and answers, and a folding map of all U.S. omnirange facilities, both in operation and planned.

AVIATION FROM THE GROUND UP, by John J. Floherty; published by J. B. Lippincott Co., Philadelphia. 1950. 157 pages. Illustrated. Price $2.75.

A simple and interesting story of American aviation for young people as the author has seen it grow from its swaddling days before World War I to today's miracles of radar and jet propulsion. Well-selected photographs add much to the book's attractiveness.

THE PSYCHOLOGY OF FLIGHT, by Alex Varney; published by D. Van Nostrand Co., New York. 1950. 269 pages. Price $3.75.

Information and advice on the emotional and psychological factors that condition human response to airborne movement. For pilots, students, flight instructors and others concerned with air transport. In this book, the author says, we "observe the airplane pilot in situations where he encounters baffling problems of adjustment in such dramatic fashion that we may learn to understand the factors that influence his behavior."

★★★★★★★★★★★★★★★★★★★★

Crash Landing

(*Continued from page 21*)

cided it would use too much of my available landing field if I tried to pull over it, and made up my mind to go right on through it.

I slammed into the tree with a crash, breaking it off about halfway from the top, then dropped my dive brake and

Lieut. Robert Severns

flaps immediately after that and went in. I was going about 130 knots when I hit the road. The dive brake hit first, throwing the AD's nose into the ground. I thought I had it right then, but the brake collapsed and the plane scooted down the road on its nose. I came to an abrupt stop near an embankment. The big plane tilted up, then dropped back.

I had noticed a Korean walking down the road as I made my approach. I thought he would have enough sense to get out of the way but apparently he thought I was just going to make a pass at him. Well, all the time I was skittering down the road he just stood there, frozen, and watched me. I came to a dead stop about 25 feet in front of him and he keeled over in a dead faint.

I stepped out onto the wing, unbuckled my parachute, and took out the life raft we carry in our chute seats. It has flares in the pockets, a signal mirror, and similar equipment. Meantime I kept my eye on this Korean. He finally woke up, took one look at me, and took off down the road like six devils were after him.

I quickly ran about 25 feet from the plane. It was hot and I didn't know when it might explode—the engine was almost burning my feet when I hit the ground. I discovered I was still wearing my helmet. It's white and would have made a good target so I dropped it.

Through all this, Lieutenant Severns had been orbiting around my position. Then the antiaircraft batteries opened up at him.

We had been told to get at least two miles away from our planes in case of a crash to avoid search parties.

I took off, crossed a hill, and came to some hemp-like growth. I sat in it and looked for my signal mirror, which I couldn't find. I then started running again. I came to a creek, crossed it, went through a farmer's field and up over another hill. I went by three Koreans—all they did was look at me and continue right on about their business.

By this time I was so tired I could hardly move. My throat was dry and parched. I had finally found the signal mirror so I dropped my "Mae West." Then I noticed some *Corsairs* and Bob's AD still circling. That gave me hope. I flashed the mirror at them (and learned later I was blinding them).

About this time I noticed the helicopter circling about three miles to my southwest. I kept signaling with my mirror and lit a smoke flare. About then, a *Corsair* peeled off and fired a rocket in my direction. Later, I learned it was Lieut. Comdr. Ronald "Slim" Coffman of Elkmond, Ala.—a squadron leader from the *Boxer*. He was escorting the helicopter to my position when the heli pilot said he was getting some ack-ack. Just then I flashed my mirror in Slim's eyes and lit my smoke bomb. He thought it was a gun position and fired a rocket. Fortunately he missed.

I ran to another position and lit another flare. By this time Slim had made me out and was directing the helicopter to my position.

I broke the 50-yard dash record in getting over to it. The radioman helped me in and we flew to Inchon and the first Marine Division headquarters, where G-2 and a lot of other officers interrogated me.

Slim and the division he was leading then closed in and destroyed my plane.

Lieut. Comdr. Ronald "Slim" Coffman

I later returned to the *Boxer* by helicopter and am now ready to go back into it again.

(Correspondent's note: The helicopter pilot was 1st Lieut. Arthur R. Bancroft USMC, from Iowa—a member of VMO6. Sanders squadron leader, Comdr. Dick Phillips of Washington, D. C., recommended Bancroft for "an appropriate award or commendation" for his work in saving Sanders under fire. When I tried to contact Bancroft at Kimpo airdome a few days later, I was told he was just then receiving the Silver Star for another rescue during which his helicopter was shot down.—J. J.) END

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Torture Flight

(*Continued from page 32*)

touted robot calculator. Ice water flows in his circulatory system in place of blood, with a boiling point lower than that of mercury.

But Uncle Sam can't have everything and so he must work out the best compromise at Wright Field. Phase 5 testing is under the direction of research-minded Lieut. Gen. Ben Chidlaw of the Air Materiel Command and the pioneering drive of Col. J. Francis Taylor, chief of the All-Weather Flying Division.

High-speed all-weather experiments became an integral part of Air Force flight testing about a year ago because the speed and surprise required in modern air warfare have made it necessary to remove weather as an obstacle in operations. The jet plane with 30 minutes to four hours fuel supply hasn't time to fly around hostile weather.

Among the Phase 5 project test pilots, all with more than 2,500 hours combat, weather and testing experience, are Capts. Hank Raschke, Chicago; Jack Armstrong, Los Angeles; Lewis Kesterson, Staunton, Va., and Lieut. Bissell McElyea, Kansas City. They bring together widely separated weather points of view as well as exceptional skill on all types of aircraft.

The flight you're making is typical of a mission flown by one of them last May.

You're ready for your mission. Your gear makes it clear that you won't give an exhibition of ballroom dancing, although no million-heiress ever made her society bow more expensively attired. Your golden helmet, lined with steel-strong plastic and sponge rubber, will cushion the blows as the storm bangs your head against the canopy. It is fitted almost skin-tight to your head to keep out the piercing noises of whining turbines and of air rushing over the wings —noises that vibrate at a cruel frequency on nerves and ears.

Projecting from the helmet are various hooks to secure visor, oxygen mask and goggles that withstand wind blasts up to 600 m.p.h.—strong enough in a bailout to peel skin from the cheeks. This rig masks you so completely that only the gleam of eyes through slits suggest your face. With radio cords and oxygen lines dangling, you look like a Minnesota halfback and two squids caught in the same unlikely net.

Your skin-tight suit may prove to be a lifesaver, too. It is dull green nylon, bulging with a system of rubberized pressure bladders, boned, stayed, and with a Gay-Nineties curve of laced corseting at the waistline. An inch hose in the small of the back attaches to the airplane's pressure system. In a high-speed turn or dive, pressure automatically inflates the inter-connecting bladders, cuts off the flow of blood in the body and prevents it from pooling in the lower extremities. This conserves it for the head region—where it is handy to have for quick thinking. Your leather gloves protect against stratospheric frostbite; your parachute is ready for immediate escape from harness in case of crash landing and your oxygen mask can force exhalation to reverse normal breathing procedure. The entire outfit, including down-lined overclothing for low temperatures at high altitudes, and various emergency bailout gadgets, costs more than $4,000. Right now you'd settle for a 69-cent T-shirt.

With a boost from the ground crew, you waddle up the ladder to climb into the cockpit, checking to make sure that the ejection seat firing pins have been pulled. You are sitting on a live 37-mm. charge that can catapult you out of the plane to parachute safety in any emergency. (You recall the "dry run" experiments with this mechanism in a ground tower, where you were strapped into an ejection seat, pulled a trigger and fired yourself like some Barnum and Bailey wonder into space. The ground device explodes the seat 100 feet up on a track, but you still feel silly when you get to the top, look down, and half expect to see clowns and elephants below you.)

While the crew chief is harnessing you into virtual immobility with straps over shoulders, around waist and legs, your eyes take in the maze of some 50 dials, gauges and levers that surround you on three sides—gadgets that pilots of 10 years ago never dreamed of. You study them to impress the location and position of each one indelibly on your mind, knowing there are times when instinct must protect you against grabbing the wrong lever, turning the wrong dial, or misreading an instrument. Mistakes under stress are dangerous, and second sight and sixth sense may have to guide you at some turbulent moment.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

"There are some things within the realm of certainty during the next 30 years. Speeds of 1,000 miles an hour, for example, speeds such that time will be overtaken."—Capt. J. L. Pritchard, London News Chronicle, Dec. 12, 1933.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Ready for flight? The tower crackles with instructions to taxi to the runway and proceed on course. Radar will lead you through the sky corridors, busy with commercial traffic plugging along at smoking altitudes in the upstairs lanes.

Push the starter button, wait for the "wick" to light and boiling air to burst from your tailpipe, get all-clear signals from your ground crews and rumble out to the runway. Rain is already pelting your windshield, distorting your view with "funny mirror" pictures of planes and buildings. Once you're in position and cleared for take-off you give it the blossom. The song of your turbine pitches upward from a throaty groan to a high whine. It pulls angrily against your brakes as you wait for maximum power. The instruments stabilize. Everything is in the green.

You release your brakes and lunge forward. Airspeed races up 60, 70, 80 m.p.h., forward visibility is gone, an opaque sheet of rain obscures everything. You hunch lower into the seat, get on the gauges and watch airspeed rise to 150. You're right on course. Out of the corner of your eye you see the runway lights flashing by. You skip, bounce, and take off at 165—a little fast, maybe. The whole craft shudders away from the jealous pull of gravity. Suck up gear, flaps. Tailpipe temperature normal. You call radar control your time off and heading. Your blip is a watermelon on his screen as he prepares to scope you through traffic and storm. You barely see your wingtip lights in the sea of milk.

The airspeed races above 400 and you start your climb as radar turns you first this way, then that, poking you expertly through the gaps in traffic. At each turn the weight of gravity presses on you leadenly and your suit bladder automatically expands as it grabs at your legs and belly. You keep the turns at minimum G's. Even with that suit protection, 1,000 pounds of dead weight pulling at you is a strain to avoid.

Within minutes you have reached the "no-man's land" of the sky. Even without your altimeter you know from long experience that you are above 40,000 feet. It feels like being shut up in a refrigerator. Your ears tell you where you are because you can now hear the "spooks." There is no better name for the wild wails, groans, creaks and other Hallowe'en sounds of the upper air, sounds that still baffle altitude engineers. They don't baffle you. You take them for granted as a part of Nature's protest against invasion of her most mysterious domain.

While your cockpit camera and other self-recording gismos relieve you of a portion of your research task, noting instrument readings, gusts, turbulence and other effects of the elements on the aircraft, you remember the questions the doctors at aero-med lab want answered. As you are guided by radar into the worst of the storm you are in the unique position of a surgeon operating on himself, carefully noting every sensation.

The bends, the chokes, the creeps, altitude and decompression sickness are all brought on by high altitudes, low barometric pressures and the introduction of human life into a realm where it was never intended to exist. They used to be mere words, familiar to medical students but without meaning to the average pilot. Now, because it's part of your mission to be an expert at amateur diagnosis, you associate them specifically with pain—pain as you feel it on the skin, in your chest, joints, teeth, eyes and muscles. No matter how you ache, you must be detached about it. Your cabin pressure has slowly fizzled out and you remind yourself to keep detailed notes on the physical effects of the flight.

Ground radar has led you into the blackest thunderstorm on its scope. He has given you a speed track of a little better than 600 m.p.h. You are entirely dependent on ground guidance, flying at a speed that leaves normal radio range lagging far behind. Even without the terrific speed, the treatment the storm is giving you makes it impossible to divide your attentions.

The first gust boots you brutally a thousand feet up, and the vacuum beyond it plummets you straight down to a thou-

sand feet below your initial altitude. The sickening oscillation begins, with an occasional sideswipe from a horizontal gust. The almost super-human struggle to keep the plane close to course makes it impossible to make a radio report of the storm. You remember to keep your tongue well inside your molars. Your jaws snap with each severe turbulent jolt. The flight instruments are jumping around like mad things but you know that any attempt to follow their crazy readings would invite overcontrol and utter disaster. You devote processes that are 90 per cent instinct to your gauges. You try to maintain as level an attitude as possible. Your three experimental flight indicators all show different readings. All the time the storm is shaking you as a dog shakes a rabbit.

You envy the captain of a sky freighter as he sits comfortably on his flight deck and orders his crew about with the confidence and calm of a potentate. Here you are, without enough hands and feet, let alone brain cells, to keep everything under control. Yet somehow you are proud to know that your flight is part of that body of research that will make high speed weather flight, under all conditions, a routine venture.

But you can't even trust your self-satisfaction on this flight. Does it mean that your oxygen supply is getting low? One of the first signs of "anoxia" is a feeling of elation and well-being, the loss of inhibition. Check your blinker . . . Yes, it indicates full flow and you can breathe easily again.

Is that hail beating on the wings and canopy, scarring your craft with the hammers of a thousand riveting machines? Impossible. Any metro expert will tell you that you won't encounter hail above 40,000 feet. But just a year or so ago they were saying you never encountered any weather above 40,000 feet. Such factors are the stuff of research.

You hope the hail stops with minimum damage to the airplane because you can't turn out of it. The effort of trying to keep rightside up is too great even for a stab at the mike button. At last the hell-hammers of hail diminish.

But once again Nature sends a resentful hazard to unnerve you, to try to drive you back to earth. Its psychological effect is both eerie and profound. Out of the black cloud that envelops you, blue flames of St. Elmo's fire trickle across the windshield, spread until they cover half the canopy with a ghostly light. As you watch, almost mesmerized, the sparks trickle through the canopy, dance crazily on the backs of your gloves. You try to brush it away but it keeps returning. Then it disappears, frightened perhaps by a call from Scott Field.

You dump dive flaps and descend as rapidly as you dare. Ears pop like little firecrackers as you swallow, puff and groan behind your oxygen mask, trying to release agonizing air pressures building up in your eustachian tubes. Your rate of descent shows 20,000 feet a minute, which gives you 120 seconds to get to 5,000 feet. And the average airliner rate of descent is 500 feet a minute.

The sergeant manning GCA radios, "I have picked you up," and starts bellowing airspeed, course and time instructions. You follow automatically and wait for him to bring you in. He reports weather of 100-foot ceiling with quarter-mile visibility, with light to moderate rain. You have no choice but to rely on him to guide you onto the runway, although you reflect, for a moment, on the inter-dependence of mankind. This renews your appreciation of the cop on the beat, the postman and the bus driver, who go through life doing reliable jobs.

You're on the final turn and GCA switches you over to the precision controller, who has to string you right down to the runway. Your gear and flaps are down. Everything is blinking green. Your airspeed reads 160 m.p.h. and you're a thousand feet above the ground. There's nothing but rain-splattered murk about you—and what happens? Precision gives you a five degree correction to the left and then moans, "I've lost you in the rain clutter! Unable to land you. Climb back to 2,500 feet and try again."

There goes your easy confidence, your sense of relief at being so close to the ground. Your fuel won't permit another go-around. This time you've got to make it. Even though it's "Operation Last-Chance," it's important not to scare the GCA operator with news that you have less than 50 gallons of fuel remaining. So you answer, with artificial calm: "Rodney. We'll do it this time."

And you do. Tired? You should beef. It's the same thing on the return trip, which you'll start in 45 minutes. END

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Korean Mission

(*Continued from page* 17)

the mountain tops in the far distance.

Like hornets, the planes buzzed toward their first objective, sweeping over Songjin. It appeared deserted——not a person on the streets, no sign of life. Seven bridges spanned a river in the center of the city, four of the spans knocked out. Five of our *Corsairs* and five AD's broke off, climbing into position for attacks farther north at two railroad bridges on Korea's main north-south rail line.

We continued on—low over the city. Bagwell flew at 250 feet most of the time, beneath the tops of hills that rimmed a valley angling into the interior. We flashed over thatched-roof villages and over brown fields with patches of yellow grain.

Following a railroad track, we saw burned-out locomotives standing deserted, bomb-pocked marshalling yards and empty hulks of factories. The countryside was dead.

We were looking for targets of opportunity along the rail line but the Navy's constant aerial screen over enemy territory had reduced them to a minimum.

Tiny villages popped into view and passed behind: Changgi, Tojigu, Kilchu (with strings of blasted freight cars and a bombed-out factory), Somyon, Sinpung-ni.

Tall mountains bordered the narrow valley on either side and we roared up the center at slightly over tree-top level, pulling up to slide over the rubble of buildings or the frequent power lines that laced across dry river beds. Behind us, at about 600-yard intervals, came the other AD and the two *Corsairs*.

We banked sharply to the right, following a trickle of water—the Orangchu'on River—toward the sea, flying past the villages of Mokkuksa and Ihyangdong. The most conspicuous characteristic of the entire country at this point was its quiet: not a wisp of smoke from the thatched huts, not a person walking on the roads, not an undamaged locomotive on the tracks. It was a dead country—prostrated by air power.

But action was to come. We passed a small lake, Chang-gon-ho, and then hit the Sea of Japan again at Hoyang-dong.

Bagwell put the *Skyraider* up on one wing and swung back inland, northward toward the Manchurian border.

Still at 150 to 250 feet, we began to see signs of life as we roared on north. Peasants with pushcarts began to appear on the road, scrambling for cover as we passed overhead. The railroad tracks cut through frequent tunnels in the steep hills. At the entrance to one we noticed traces of white smoke curling upward.

Bagwell was on the radio immediately, calling the two *Corsairs*. "Put a couple of rockets in that tunnel mouth; I see smoke coming out. Drop a couple in—but don't waste any."

Up to this point the ceiling had been low but now the sun slanted through the clouds, shining on tree-covered mountains beginning to turn yellow, red and brown in the Korean autumn. We wheeled over a couple of huts and a woman ran out and threw herself on the ground.

Still below the level of the mountains on either side we spotted a concrete railroad bridge where Bagwell had strafed North Korean troops on an earlier mission. We buzzed the bridge but discovered only a solitary peasant, trudging along with a pushcart. He was caught entirely by surprise and stood petrified as we went over.

The peasant began to run as we continued north—and Bagwell detached the *Corsairs* to work on the bridge while we continued the mission. Looking back, I could see the planes diving like hawks toward the bridge and saw the first rockets hit the target. In the center of the span, orange flame spurted and black smoke puffed. The hit was direct.

As the miles passed, the roads became crowded with civilians and ox-carts.

We approached a large city with a railroad marshalling yard on the outskirts. Bagwell pulled high into the sky to make our first bombing run on a train he spotted.

"I've got a train up here," he called over the radio. "We'll make a bomb run . . ." Then a second later: "Here's another engine—there are two of them!"

We climbed to 5,000 feet. "Hold tight, Chuck," said Bagwell over the intercom. "Here we go."

He nosed the plane down—from 5,000 feet to 4,000 . . . 3,000 . . . My ears popped and I swallowed quickly to ease the pressure. The plane seemed to be dropping out from under us . . . 2,000 . . . 1,500 . . . He released the bombs and began his pull-out. I was pushed down in the seat. I could feel my cheeks and jaw sag. Then we were flashing upward.

Looking back, I could see a puff of black smoke—a near miss. But Lieut. (j.g.) Stephen J. Shea, 26, of Elmhurst, L. I., Bagwell's wingman, was already on his run. I could see his plane hurtling toward the ground and watched the bomb as it sped on its way. His hit was right beside the lead locomotive and the engine began to spurt steam from a punctured boiler.

At 2,000 feet, Bagwell rolled the *Skyraider* over again, and began a rocket run on the second of the trains. With a red flash, the rockets swooshed from beneath the wings. We pulled out only 500 feet above the locomotive.

The process was repeated several times—Bagwell and Shea taking turns with bombs, rockets and 20-mm. cannon. The miniature trains sat about 500 yards apart, spewing steam.

On one of his runs Bagwell pulled almost directly above the rear locomotive at 5,000 feet, then nosed the big *Skyraider* down. The altimeter spun around, the plane dropped like a bomb itself. With a pop, an explosive charge pushed the bomb from under the fuselage and it began its lethal track to the target. The plane began to pull out, slowly it seemed to me, shuddering under the strain. I could see the ground rushing toward us and felt the plane shake. Then the bomb exploded, a dull roar beneath us, accompanied by a sharp concussive shock and acrid smoke in the compartment. I looked down—a jagged piece of shrapnel had slashed through the fuselage at my feet and lay in the compartment. Another piece had sliced a hole in the right wing. Two other pieces, we discovered later, had dented other sections of the wing.

"Missed the engine," Bagwell called. "But we got a car loaded with ammo right beside it!" The shrapnel had come from the exploding munitions car. Looking back, I could see that the blast and resultant explosion had completely knocked two cars off the tracks.

With the two locomotives crippled and spouting steam, Bagwell radioed to the *Corsairs* and told them to finish the job.

"How about letting me off at the next forced landing?"

Then he and Lieutenant Shea in the other AD headed northward toward the Manchurian border.

At that time U. S. planes were under orders to go no nearer than 20 miles to the boundary. About 21 miles south of the line we began a long pull-up. I heard Bagwell shout over the intercom:

"Look at that little b———— down there. He's shooting at us!"

Below us, to the left, we saw a red twinkle on the side of a mountain—the first antiaircraft fire we had encountered. The world below seemed distant and the fire was far away—coming from a remote and detached sphere far removed from any immediate concern on our part. It apparently was about .50-caliber stuff and Bagwell probably would have headed over to knock the position out but at that moment he spotted a better target than a machine gun.

"There's another engine!" To our right, against the side of an almost vertical mountain, was a small switch engine. Bagwell rolled the AD over and I could see tiny men frantically jumping off the engine onto the ground.

We began a steep strafing run with the other plane on our tail. The 20-mm. cannon barked and the planes climbed high behind the mountain. At 5,000 feet again, Bagwell started a wide, curving dive, hugging the side of the slope, right into the rear of the engine. I looked to our left and could distinguish the leaves on trees as we screamed down the slope. Suddenly the engine popped into view and Bagwell released his rockets. They exploded on target and we swung back into the sky behind the mountain.

Not until the engine was knocked out of commission did the two *Skyraiders* pull out and leave. The blinding dives around the steep mountain had been only a few feet from the terrain for thousands of feet on the way down. At times we seemed to miss trees and engine by only inches. But Bagwell and Shea stuck to the job until they'd expended everything but one rocket that wouldn't fire.

Then, with Shea close behind, Bagwell swung south over the bulging mountains. We'd been over Korea for 125 minutes, had knocked out three locomotives, had spotted an automatic weapon firing on us, and had acquired a shrapnel hole through the wing and a big gash in the fuselage where the hunk of shrapnel had torn through the bottom beside my foot.

Down below, North Korea's war potential was withering. It was possible to see the wheels grinding to a halt. The dusty roads were empty of vehicles. The railroad yards were blotched with bomb craters and the marshalling yards were a shambles. Bombed-out trucks and trains dotted the countryside and factories were levelled.

As we rendezvoused with the rest of the group over Immyonghae Bay, north of Songjin, our radio opened up frequently with messages from incoming Task Force 77 planes. The screen of aircraft over North Korea was maintained all day, with missions rotating over the target area.

I looked back over the burning countryside and remembered what 32-year-old ROK General Song, commander of the South Korean Capitol division, had told me several days previously. Standing in front of his division command post at Wonsan, the General had squinted into the sky and watched blue Navy *Corsairs* and *Skyraiders* circling overhead. He turned to me and grinned: "Greatest thing is air support," he said in broken English. "It is good, good. Makes attack easy." END

Home-Built Planes

(*Continued from page* 31)

thing it seems remarkable that some manufacturer hasn't bought production rights for them—as Cessna has for Steve's spring metal landing gear.

Buttercup was actually designed and built in 1937. The wing has a 28-foot span and is of fabric-covered wood construction. The fuselage is of welded steel tube construction and is also fabric-covered. *Buttercup* stands only five feet high and is 21 feet long.

Power is supplied by an 85-h.p. Continental engine, which gives *Buttercup* the amazing cruise of 130 m.p.h. at 75 per cent power. *Buttercup* has a gross weight of 1,250 pounds and carries enough fuel for 3½ hours at cruising speed. Rate of climb is 900 f.p.m. Perhaps the most amazing feature of *Buttercup* is its slow-speed characteristics. The plane has a landing speed with flaps of 33 m.p.h. Take-off and landing runs, lightly loaded, are only 200 feet.

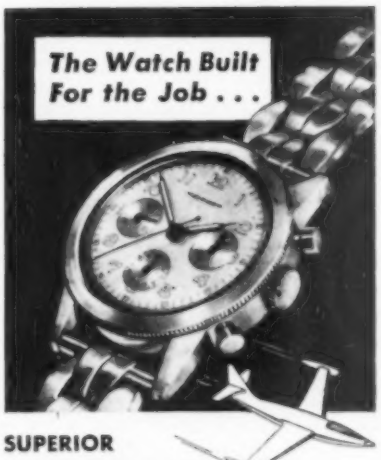
Buttercup is difficult to spin and has good stall characteristics. Although control surfaces are very small, control is smooth and positive, and effective even at very slow speeds. When you land *Buttercup* at slow speeds you get the impression it will float forever. The flaps are mechanically operated and the glide path can be effectively controlled by adding any desirable amount of flap.

Big X is a four-placer very similar to *Buttercup* in design and structure. The plane was built in 1945, is 21 feet long and has a wing span of 29 feet. It is powered by a 150-h.p. Franklin engine which cruises it at 147 m.p.h. It has a landing speed of 40 m.p.h. with flaps.

The plane has a special McCauley propeller and has the conventional slab type steel Wittman landing gear. Fully loaded, *Big X* will carry four persons, 37 gallons of gasoline, and 100 pounds of baggage. Gross weight is 2200 pounds.

Flight characteristics are similar to those of *Buttercup*. The flight loads on the controls are fairly light and evenly balanced. Stall and spin characteristics are extremely good.

Both planes sit low, have big doors, and are easy to load and unload. Both also have especially good visibility on the ground. They have fairly low aspect ratio wings. Though a bit crude in appearance, they are are rugged and simple —and they perform! END



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Bank and the Bunk

(*Continued from page 30*)

and saw Tom. "You look like a mule who has just found out the facts; making a pretty long face, ain't you? What're you worried about?"

"I'm not worried, exactly," Tom replied. "I just don't know what to believe."

"That's easy," the tall pilot observed. "Don't believe anything until it is officially denied."

"Tell me something. When you are banked in a turn are you closer to a stall than when you are flying straight?"

"Sure you are."

"Why?"

"Why? Doggone it, Tom, why do you always want to know why for? First thing you know you will be just like those philosopher guys who spend their lives trying to find out why they are living. Why does a girl look purty? Why do I care just so long as she does?"

The professor was sitting propped against the wall at the end of the counter, reading a book, as usual. He was called the professor because he wore glasses and a resigned look and he knew mathematics.

"What is the problem?" he asked.

"Well," Tom said, "it's like this. I was hangar-flying with Bill Jasperson and we got into a big argument on stalls and turns. I got a lot of respect for Bill—after all he's an airplane engineer, but I sure think he's wrong about this."

The other inmates now clustered around Tom's table. One of them asked, "Does this here Bill Jasperson fly, too?"

"Yes he flies okay, and pretty sharp too, but this stall business is an engineering problem and Bill ought to be on the beam on that. But I can't help but feel he's all wet."

"What does Bill claim?" one of the eager fly-boys asked.

"Why, he claims that the stalling speed for any given turn actually *decreases* with steeper banks, and that if you have to make a turn at low altitude, it's better to overbank it."

The professor slipped into one of the chairs. "He's wrong," he stated quietly.

"Well," one of the onlookers put in, "that's a matter of opinion."

"Oh, no, it isn't," replied the professor. "It's a matter of mathematics."

"That's the trouble," the tall pilot said. "I don't know any higher mathematics. How can you prove anything to me?"

"Listen," the professor said, "You don't need to know any higher mathematics. You don't need to know any more than the rabbits do. They know how to multiply."

"All right, professor," Tom said, "give us the proof so that we can all understand it, even Sam who can't count over nine since he got a toe shot off flying over Saipan."

The professor's face lit up with pleasure. There was nothing that he liked more than to spread a little enlightenment around the world. "I'll have to have a pencil and paper," he said, and the tools were soon brought to him.

"Now I'm going to draw you an airplane that is flying straight and level and then the same one in a bank, and we will compare them. You will please note the vectors."

"What's a vector?" the tubby one asked.

"It's a line."

"Sure, I know what that is. I was giving my girl a vector last night, but she said I had the wrong angle."

"Pipe down," Tom begged, "and listen."

"A vector," said the professor, "is a line picturing a force. The direction of the line is the direction that the force is acting in, and the line is drawn so that its length is in proportion to the magnitude of the force, that is, the more the force, the longer the line. Get it?"

"Yeah, we guess so."

"So here," the professor went on, "I draw an airplane in front elevation so that we are looking along the axis of the fuselage, so." He drew it. "We will call this Figure 1. Now, I draw this line straight up and down, starting at the fuselage and running the line up. So." He drew the line. "Now I put a little arrowhead at the top of the line and one at the bottom of the line. So." He drew in the arrowheads.

"But," one of the men objected, "you got one arrowhead pointed up and the other pointed down. How can it be both?"

"It is really two lines," the professor said. "The one pointed up represents the lift of the wings. The one pointed down represents the pull of gravity; they are equal and opposite and they just balance."

"Oh."

"Now I shall draw Figure 2. This is the same as the other airplane except that it is in a bank. I run this line straight up as before and I put the arrowhead on it as before, the one pointing down. Gravity still pulls straight down. From the top of this line I run another line horizontally. So."

"What does that line represent?"

"It represents centrifugal force."

"How do you know how long to draw that one?"

"I don't, yet. I just draw it out so that it is sure to be far enough. Now I draw the lift line, the lift vector. That one has to be at right angles with the wings because that is the direction of the force that the relative wind makes when it acts on the wings. We can call it the lift if we remember that in this sense the lift does not have to be straight up with respect to the ground; it is at right angles to the wings.

"I don't know how long to draw this line, either. I just draw it until it intersects the horizontal vector. The point where the two lines cross determines how long they both have to be. This is known as the composition of forces. Kindly note that the lift vector in Figure 2 contains in it the two other vectors, the vertical one acting against gravity, and the horizontal one acting against centrifugal force."

"Now, wait a minute, professor. Not so fast. In Figure 2 you drew that lift line or vector or whatcha you call it, longer than you did the lift line in Figure 1."

"That is the point," the professor said, with satisfaction roosting on his face. "It has to be longer. It has to make up not only for the weight of the plane, the pull of gravity, but it has to make up for the sidewise pull of centrifugal force."

"That's it," said Tom. "When you are in a steep bank and a tight turn, why, you can feel yourself sitting harder in the seat."

"Yes," the professor put in, "it is a greater force than the force of gravity alone, and so there has to be more lift to counterbalance it."

"What happens if you don't counterbalance it?" someone asked.

"You go downhill," Tom said.

"That is right," the professor stated. "But just going downhill is not enough to balance it. Going downhill at a steady rate will not counterbalance the force, only inertia can do that. Right here is where many pilots make their mistake. Only acceleration can oppose the downward vector, the part that is greater than the lift; only acceleration can push back. The result is that you go downhill faster and faster."

"Just wait a minute, will you?" the tubby one objected. "In a regular turn you don't go downhill. That's on account of your lift line being longer, like you drew it, I can see that. All right. But how do you get more lift in a turn, tell me that?"

"Oh," the professor explained, "you

FLAT SPINS

As Pfc. Val Weissman, Jr., an Air Force ground crewman from Evansville, Ind., sat in a rain-drenched tent in Japan waiting for his B-29 to return from a Korean raid, he received notice that his draft board was looking for him as a "delinquent."

So you're under the impression that artificial rain-making is something new? Well, Congress appropriated money for balloons, loaded with dynamite, to be sent up into rain clouds—back in 1890.

"This is a most deceitful enemy we're fighting," declared Lieut. Robert R. Blank as he got out of his B-26 after a raid on Seoul. He explained: "I see this big round tank with a big label 'DANGER—GASOLINE' on it. I know they haven't got any gasoline in there—who're they trying to fool? But I figure they might be hiding something else, so I go in low and strafe it. It almost blows up in my face. They *did* have gasoline in it!"

What's-in-a-name-department: Henry Gromyko of Reading, Mass., was inducted into the U. S. Air Force by Sgt. Matthew S. Malik.

A fantastic drive-in being built on Sunset Boulevard in Hollywood has a huge streamlined top which flares out like the wings of a futuristic rocket ship. Humphrey Bogart, driving past with his wife, Lauren Bacall, remarked dryly: "They'll never get it off the ground."

A 26-year-old British commercial airline pilot quit his job and became a street sweeper, declaring he wanted to "do a job of real service to the community."

—*Harold Helfer*

pull back on the flippers and that gives you a greater angle of attack. Let me see if I can explain it. In a turn you sit in your seat a little harder; it's just as though you weighed more. In this sense the whole airplane weighs more, too. And you all know . . ."

"That's what I wanted to say!" Tom cut in. "The steeper the bank the more the airplane weighs. It's just the same as, anyway. Everyone knows that if you have a light load and are flying straight and level you don't have so much angle of attack as when you have a heavier load. If the load got heavy enough you would stall, so if the bank gets steep enough you would stall. Isn't that right, professor?"

"In the common idiom it is true, not scientifically, perhaps, but it amounts to the same thing."

"Well," the tall pilot asked, "if you are banked in a turn, how can you figure how much more load you have?"

"You see the drawing," the professor went on. "If I used instruments and made the drawing very accurate, you could tell by measuring the lift vector in Figure 1 and comparing it with the lift vector in Figure 2. For example, if your airplane weighs 5,000 pounds and the lift line in Figure 2 measures half again as long as the one in Figure 1, it is just the same as if your airplane weighed 7,500 pounds.

"Of course, if you want exact figures you can get them at once by referring to a table of trig functions. All you need to know to find it is the weight of your airplane on the ground and your angle of bank."

"I don't have no time for no functions," said Tubby. "I ain't goin' to no functions, whether they have a table or not."

"Well, you will," Tom said. "If you don't savvy this problem and you overbank to keep from stalling, you will go to a function, my lad, and you will be the main attraction, too."

"Well," asked one of the men who had been silent thus far, "can I depend upon what this four-eyed kid said?"

"Hell, yes," Tom Jones replied. "You can bank on it." END

Militarize the CAA?

(*Continued from page* 15)

Apparently the Air Force believes that not even the broadened authority that CAA was recently given is the complete answer unless it can be made to dovetail more completely into the military scheme of things. Last session, Congress passed a new security bill which sharpens CAA's powers in several respects. At the discretion of the President, for example, it can require the filing of flight plans where necessary to the national welfare. At present, flight plans are only insisted upon where the safety of air commerce is involved.

These emergency stand-by powers also permit CAA to limit the amount of air traffic entering a defense area. Furthermore, if security conditions should require that ground control stations keep in constant touch with air traffic entering important defense areas, the agency can issue an order making two-way radios mandatory. CAA Administrator Nyrop has already warned that civilian flyers would be well advised to get hold of this equipment before the supply becomes tight. At present only one-third of civilian aircraft have two-way radios.

Those within CAA who favor the move believe it might strengthen the agency. Over 3,000 of the CAA's 17,000 employees now hold reserve commissions in the Air Force or the Navy air arm. Nearly all of these men are in key positions in CAA's airways and communications systems and are subject to recall to the armed services.

But the militarization of the CAA would change the picture completely. Whether it seems logical or not, the fact remains that Selective Service officials and the military establishments hold to the theory that men in uniform are performing an essential service no matter what they are doing. Reserve personnel could stay with a militarized CAA and strengthen it.

Those lined up against the proposal maintain that it is not only silly but inherently dishonest to militarize an agency in order to keep its key personnel from being drafted or recalled to active service. They think that the proper approach would be to set up a workable deferment procedure for Federal employees whose jobs are essential to the defense effort. They do not have much patience with the contention that the airways cannot be fitted into the defense pattern unless militarized. They point out that during the past war, a coordinating committee on which civil flying organizations were represented managed to keep the airways functioning without hitches.

Finally, the statement that the AF will be hampered in protecting the coasts and borders and in patrolling security areas unless it has CAA under its thumb is not regarded as very impressive. It is felt that the AF would not have its patrolling and intercepting tasks in such areas materially lightened however closely it were tied in with CAA. Under any control plan a few civilian planes are bound to stray into forbidden zones or to forget about filing flight plans. The AF has to be constantly on the alert in such areas anyway.

Eventually the battle over militarization of the CAA will have to be fought out in Congress. If the international situation deteriorates more, such legislation is believed to stand a good chance of passage. A preliminary draft making the CAA Administrator a brigadier general with appropriate ranks below was considered too drastic in certain other respects. The Budget Bureau bounced it back to CAA for further study. A milder measure has been suggested that, among other things, would clearly exempt the air lines from military domination. END

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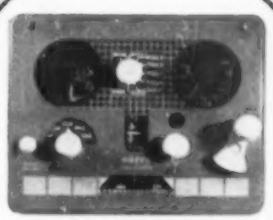

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Civil Air Patrol

(*Continued from page 29*)

The concept of civil defense outlined by the NSRB provides that communities within a critical target area will furnish mutual aid to one another. Communities outside the target area will furnish mobile support, rushing in trained personnel and supplies to assist in firefighting, rescue, first aid and other services.

I have instructed CAP wing commanders and wing civil defense coordinators to offer state and local civil defense directors our plan and facilities, and recommend that CAP be represented on civil defense councils.

We have planned a number of mobile support units. These teams will include transportation, rescue, communications and radiological defense specialists, as well as pilots and mechanics for emergency air missions.

Mobile support units will be composed of 42-man teams with 10 airplanes, three trucks and a jeep. Each group will have air to ground and station to station radio, maintenance equipment and rescue and radiological defense supplies.

As many of these units as necessary can be sent on short notice to any critical area within the state. Except for food and shelter they are self-supporting.

State officials and CAP Wing commanders in many states have developed disaster plans that have proved effective in local emergencies. These can easily be revised as part of the greater civil defense plan.

Search and rescue training conducted with the Air Force has given us the basis for:

- Evacuation of sick, injured and stranded persons.
- Patrol of roads, fires and flood and snow bound areas.
- Transportation of medical and food supplies.
- Traffic control where normal facilities have been disrupted.
- Communications, where normal power failure necessitates use of mobile generators.

There are other jobs the CAP can do in wartime. Patrol of 600 million acres that hold virtually all our pulpwood and other domestic wood products would be vital.

Emergency equipment and supplies stored in the civil defense fringe area could be transported rapidly by air. Physicians, dentists, pharmacists, radiological teams, first-aid workers, nurses and litter-bearers could be flown to disaster areas.

Blood donors and blood banks have been flown from one city to another. Other air transportation services that CAP can provide include flying of survey work teams, decontamination teams and hospital patients. Air reconnaissance of unexploded bombs would speed the work of bomb disposal teams.

Many local CAP units coordinate their radio communications with those of the police. In Mississippi during a recent hurricane, the Governor's office dispatched a message through the CAP network to mayors of threatened towns along the coast. Effective communications could be maintained between Federal, state and local civil defense organizations.

In time of emergency when local electrical power may fail, the CAP radio net can operate at 90 per cent of normal with mobile generators on a standby basis.

Some Wing commanders have advised me that the state Civil Defense directors are reluctant to fit the CAP into civil defense plans because the CAP's first responsibility is to the Air Force.

I cannot appreciate that reasoning. On that basis we might count out the local hospital because it could be called on to take care of military casualties in the area, or rule out a construction company's equipment because it might be commandeered by the Army Engineers to rebuild a bombed bridge.

In wartime the first responsibility of all civil groups, and indeed of all people, is to the military forces whose job is to end the war successfully. Unless the military fulfills its mission, the most air-tight civil defense won't save us from oblivion.

Even with its present number of planes and members, the CAP is able to handle its Air Force missions with plenty left over for civil defense functions. When the chips are down, we anticipate that many more private pilots and others in civil aviation will volunteer for service with the CAP. With a return of gas rationing in wartime, only essential flights will qualify for use of gasoline. Whether civil pilots enter the CAP or elect to volunteer in other ways, the important net result is that they'll be available for emergency missions. On our part, we'd like volunteers to join now while we have time to train them adequately.

The CAP's organization and training program fits in with the work of other flying groups, as we have shown in many joint maneuvers.

It's not our intention in CAP to dominate civilian flying, nor has it ever been our intention. We invite other civilian flying organizations to cooperate with CAP to establish a civilian air force that may be used throughout the country in an emergency. The only organization we wish to control is the CAP. We can, and we will, cooperate with and assist all other organizations who join in civil defense. END

The Mail Box

(*Continued from page 8*)

feet (height of the *Packplane's* flight deck when the cargo carrying fuselage is detached) or collapses to three feet for easy storage. It weighs only 29 pounds and may be handled easily by one man.—ED.

THE SACRED PORTALS

In reply to Dorothy Brandon's letter [November, 1950, FLYING], women are as good as men at flying, but that still doesn't make them good opponents in all-night poker parties, or hangar bull sessions.

It has been my experience that women as a rule are too naive to bluff in poker, and they don't exaggerate enough to be heard in a bull session.

I used to enjoy my days at the airport in Tacoma, Wash., until one day a woman [Pauline M. Dyer, "I learned About . . ." April, 1950, FLYING] invaded our sacred portals and started flying regularly. All of the bachelors (myself included) started trying to figure out a way to get rid of the gal. It wasn't her flying that bothered us, but she consistently beat us all on the pin ball skill game in the airport office. There was only one solution. I married the gal after exacting a promise that she would in no way curtail my flying and would never get closer than 10 feet to the pin ball machine . . .

A. ANDERSON

Pittsburgh, Calif.

GWINN AIRCAR

Do you have any information concerning the Gwinn *Aircar*?

W. C. MEYER

Chicago, Ill.

• The Gwinn Aircar Co., Inc., Buffalo, N. Y., was formed in 1935 by Joseph M. Gwinn, Jr. The first *Aircar* was completed in 1937 and received its ATC. Powered by a Pobjoy *Niagara II* engine, the two-seat *Aircar* had a top speed of 118 m.p.h., a 103-m.p.h. cruise and a 41-m.p.h. landing speed. Empty weight was 1,099 pounds and gross weight 1,532 pounds. Range was 495 miles. This unconventional lightplane had no rudder. A single control column moved forward and back for longitudinal trimming and the wheel was used for turning both in the air and on the ground by being interconnected with both the ailerons and the steerable front wheel. Flaps were operated by a single pedal. Famed pilot Frank Hawks was killed in August, 1938, when he flew an *Aircar* into some high tension wires—". . . an accident not in any way the result of the plane's novel features . . . it was so safe it gave one of our finest pilots an overconfidence in its abilities . . ." [July, 1939, FLYING.]—ED.

FORCED LANDING

On a wet and cold day several weeks ago, I made a forced landing on the Reed estate in Greenwich, Conn. Barring the fact that I thank God for no injury to me

or the plane, I still am obliged to thank the Reed family; Maurice Gross, Manager of the Around the World Room at Westchester Airport; and Gene Duffy, Manager of the *White Plains Recorder*. These people, avid flying enthusiasts and readers of FLYING, helped me considerably in making the predicament of being stranded a pleasant experience. Good works like these restore not only a flyer's but a clergyman's faith in people.

I might add that this was an interfaith rescue operation: The Reeds are Protestants; Mr. Gross is of the Jewish faith; and Mr. Duffy is a Catholic.

REV. DANIEL D. DRISCOLL
St. Paul's Polish Catholic Church
Newark, N. J.

WINGED ALLIGATOR

The leading aviation club of Florida . . . is the Florida Flying Alligators. The club holds its annual initiations at the St. Augustine Alligator Farm, a sizable ranch devoted to raising thousands of alligators.

You may be interested in this photograph of "Glider," the original air-minded gator, decked out in a brand new pair of wings . . .

JOHN L. VOLLBRECHT
St. Augustine, Fla.

● "Glider" is taken for a stroll (above) by shapely Betty Hermann—"Miss St. Augustine, Florida."—ED.

AIRMARKER

The giant airmarker just completed at Pomona, Calif., should settle the "world's largest airmarker" controversy for quite some time [See "The Mail Box," May, 1950, FLYING]. .

The marker which is located on top of a mammoth grandstand, has 97-foot letters and is clearly visible from over 15,000 feet. The CAA says it is by far the largest marker of which they have any record.

One mile to the west of the marker (indicated by the arrow at the right of the letter "A") is Brackett Field. The

other arrow points to true north and the numbers give the latitude and longitude of the marker.

The giant sign was painted in one afternoon by a large number of Boy Scouts using only hand brushes. Over 100 gallons of traffic-line paint (yellow and black) and thinner were used.

This marker should make Pomona one of the leaders in the recent practice of airmarking to welcome and guide transient pilots.

RICHARD K. TODD
Pomona, Calif.

FLYING CLUB COLUMN?

FLYING would be improved tremendously if you would inaugurate a "Flying Club Exchange" column. The column would be made up strictly from news and letters received from flying clubs all over the country. An exchange of ideas and activities could mean the difference between a failing club and a successful, progressive club. Think of the "shot in the arm" civilian flying would get!

I hope you will give this idea serious consideration . . .

EDWARD S. MAKOWSKI, Vice President
Broome Flying Club, Inc.
Endicott, N. Y.

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*Charles B. Turner
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I Learned About . . .

(*Continued from page 42*)

I got the old cough and backfire again.

The minutes had dragged into an hour when I heard the throbbing of an airplane engine, and a C-47 buzzed overhead about 100 feet below the overcast. He spotted me, circled once, and dipped his wing.

But since he flew on, I decided to continue taxiing. After another long hour, dusk began to settle and visibility cut down to almost zero. Then I heard surf pounding ahead—and saw I was headed straight into a narrow coral reef that extended several miles into the water! To hit that reef would mean a smashed plane and probably a dead pilot. Heavy seas and razor-sharp coral are a lethal combination.

Hastily, I tried to swing the plane around. The wind caught me from abeam, forcing me to taxi with one wingtip float in the water and the other jutting up in the air. Everything went smoothly for about three minutes. Then the *Kingfisher* heaved up the side of a big wave, slid down the other side, and with a crash the lee wingtip float was carried away!

I knew that the plane would capsize any minute and jumped out of the cockpit to try to balance the starboard wing. The attempt was futile. With a plop, the plane turned turtle, dropping me into the water and coming to rest with the main float bulging out of the water but the wings submerged.

I climbed up on the main float, soaking wet, and sat there surveying the situation. Luckily, I had spent most of my life around the water, and even in that somewhat precarious position wasn't too worried. I knew the C-47 had spotted me, and felt confident someone would be along shortly.

Still wearing a flying suit and complete flight gear, including heavy Army shoes, I more or less automatically inflated my Mae West. The plane itself drifted beyond the coral spit and angled out toward the sea.

Almost before I had time to become concerned, a big PBY lumbered overhead, practically hugging the surface of the water. It was obviously a search and rescue craft, and I balanced on the float waving my arms wildly. The rain was still falling and the night was black. Even though the *Catalina* flew directly over my head, it didn't spot me!

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As the big plane passed out of sight, I suddenly realized what a dangerous situation I faced. The seas were getting heavier, and there was a good chance the *Kingfisher* might give up the ghost and sink. I decided to get my life raft out of the plane.

In a *Kingfisher*, the life raft was carried in an almost inaccessible location. You had to get in the cockpit, swing the pilot's head-rest out of the way, open a small door into a compartment behind the pilot's seat, unstrap the life raft and squeeze it through the narrow opening. Added to this difficulty, I had forced a small handbag through this door in front of the life raft!

My Mae West was inflated, and I didn't want to bother with deflating it and having to blow it up again. I was at home in the water, so with contempt for any normal caution I took off the life jacket and secured it by its strap to a catapult fitting on the bottom of the main float.

Still wearing my clothes and heavy shoes, I dove into the warm water and swam under the plane to the cockpit. I pulled at the head-rest several times before it moved, then jerked at the door and finally managed to get it open. The seconds were passing rapidly, and I was already suffering from lack of air. I grabbed the handbag—managed to extricate it—and then started fumbling with the life raft straps. But the strain was too great. Desperately in need of air, I pushed myself out of the cockpit and struggled furiously for the surface. Then my head hit something. I had come up *under* the submerged wing! I clawed at the smooth surface, unable to get a handhold. At that point I was frantic, and gave one last desperate stroke—coming out on the surface of the water.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

"Through the efforts of Comdr. John Barry Ryan of the United States Aeronautical Reserves, the U.S. will probably have one of the largest aerial navies in the world within the next 12 months. . . . This will give the U.S. a fleet of 50 military planes . . ."—New York American, January 3, 1911.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

I gulped the salt air, filling my lungs and still trembling from exhaustion. After a few moments, I looked for the plane and saw it a few yards away. I swam toward it, only to discover it was drifting faster than I could swim.

Hurriedly, I stripped everything off except my shorts and tried again to reach the *Kingfisher*. By this time, it was 30 to 40 yards away, a bobbing black hulk against the waves. Sometimes it would drift completely out of sight, then I would get a short glimpse of it as I was carried over the top of a swell.

I swam furiously—and couldn't gain a single yard. Gradually the plane got farther and farther away, and eventually I couldn't see it even intermittently.

The gravity of the situation descended upon me. Here I was—four or five miles at sea in the South Atlantic Ocean. The night was black. Rain was beating down. The seas were heaving. And I had no life jacket or equipment of any kind except a pair of Navy undershorts, my dog tags, and a Mido waterproof automatic wrist-watch.

I rested a few moments, floating. Then—almost panicky—I swam steadily toward what I thought was the shore. After a half hour, my strength had ebbed almost completely and I was exhausted. I realized that if I planned to survive I'd have to conserve every bit of my remaining energy and take things easy.

At this point, I had a pretty good idea what it would be like to step into the next world. . . . The prospect wasn't pleasant. All I could remember was what I *hadn't* done in life and what I still wanted to do. It seemed like an awfully ignominious way to die—by throwing away a Mae West and losing a floating plane.

I hadn't completely given up hope. I know that—because I found myself making resolutions for the future. One resolution: I would make full use of every item of safety equipment that was furnished to me. If a life jacket was in a plane, I'd put it on when I started moving that plane at sea; and I wouldn't take it off until I knew for certain I wouldn't need it.

The future, which up to this time hadn't appeared particularly glamorous, suddenly became about the most appealing thing in my experience.

The more I thought, the madder I got. I decided that I would make it to shore—if I had to swim for a week. So I began alternately to float on my back and swim the breast stroke. I'd float until the waves caused me to swallow so much water that I'd retch. Then I'd swim and tread water until I was exhausted again.

I don't know how many hours I was in the water. My motions became completely mechanical, and my mind became almost entirely dulled.

Just as I was lapsing into a stupor, the moon broke through the clouds in the west and the rain stopped. I lifted my head—and silhouetted in the light of the moon I could see the tops of palm trees! I strained, and could hear the sound of the surf.

Apparently the tide was washing me into the shore—and I began to have another worry. Rocky sharp coral crag extends almost the entire length of the shore in this area, and it's knife-like when you're dashed against it. I kept my feet doubled under me as much as possible, coming closer and closer, and suddenly realized that I'd been washed through one of the rare openings in the coral.

At about the same time, my feet touched the sandy bottom and I crawled up a few yards, passing out.

The rest is anticlimactic. The next morning I staggered down the beach and found a Brazilian Army beach patrol examining the *Kingfisher* wreckage.

As I approached the crumpled plane, I could see only one thing. Still tied to the float, the Mae West that could have prevented much of the ordeal was the only undamaged piece of equipment on the plane.

END